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Economic Aspects of Ohio Farmers' Elevators

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INTRODUCTION

The object of this study is to trace the development of Farmers' Elevators in Ohio and to deal with some of the more important management problems which the elevator has to meet.

The time of the study, 1924, was advantageous from several standpoints. This period was immediately following the deflation of prices which started in 1920. This deflation resulted in financial reverses for practically all companies and caused many of the less efficient to cease operations. The principal causes of these failures were (1) Lack of competent management, (2) Inadequate financial support, and (3) Organization in localities where there was no demand or need for the services offered by a farmers' company. The records, for the most part, therefore, are of companies that had weathered financial difficulties and were likely to continue as local marketing agencies for their communities. The results of speculation, the lack of competent management, of attention to proper grading, and of adequate financing were important influences in the downfall of numerous companies. The history of this period is not yet entirely closed, but most of the companies that lived through the period of 1920 to 1924 will remain as a part of the grain marketing machinery of the State.

SOURCES OF DATA[1]

Data for the study were secured by means of a field survey of all of the Farmers' Elevators known to exist in Ohio. The balance sheet and income and expense statements, in most cases, were secured direct from the elevator and, in some cases, through the courtesy of the official accountant of the Equity Union, the chief accountants of the Ohio Farm Bureau Federation, or the American Co-operative Journal. The data used deal, for the most part, with 165 companies, but in some instances they cover all of the 265 companies located in the State.

[1]Credit is due Mr. Erol S. Bird and Mr. W. C. Schaeffer for assistance in the collection of data and to Mr. Calvin Heilman for assistance in tabulation.

DISTINCTION BETWEEN GRAIN AND MERCHANDISE ELEVATORS

In dealing with the problem of costs of operation, it was deemed advisable to make a distinction between elevators which had a large part of their business in grain as compared to those which had a large part in merchandise. The shift in Ohio agriculture to dairying in some sections, to livestock in some, and to truck crops in others is changing the proportion of the business that deals with grain over to merchandise. The advisability of this distinction becomes apparent when costs of operation are discussed.

THE DEVELOPMENT OF FARMERS' ELEVATORS IN OHIO

Farmers of Ohio were among the last to enter into the grain business. Other important grain states had made considerable progress in the development of farmers' elevators before the movement made any progress in Ohio. According to information available, 286 farmers' elevators had been organized in Ohio up to 1924, at which time 265 of them were in operation (Fig. 1). In addition there were 420 flour mills and 348 line and independent companies in operation as competitors to these farmers' companies.

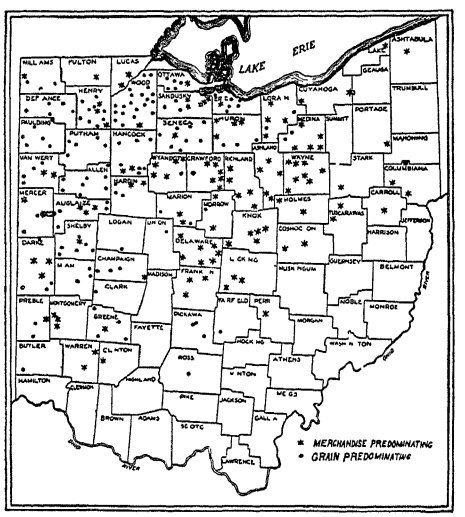


Fig. 1.—Location of Ohio farmers' elevators

The first elevator was organized at Rocky Ridge, Ottawa County, in 1904, as a direct result of the success of elevators farther west in the Corn Belt. The local miller and store keeper was of the opinion that the farmers should take over the business and it was through his influence that the company was started.

The plan of organization of this first company was rather unique. Each stockholder in the company paid a membership fee of $3, and made a down-payment of $5 on a $100-share, the balance, $95 per share, to be paid from dividends from the business. They took over the business when 32 farmers had joined, and by the end of the year had acquired 8 additional members. Only one share was

allowed each man. In addition to the 40 shares of stock sold to the members, preferred stock bearing 6 percent interest was issued as a means of financing the company. A general store was operated at the time of organization. Rather large dividends were paid from the beginning, some members receiving $100 the first year, on the basis of patronage to the company.

The success of this elevator was soon known over northwestern Ohio. The second elevator was started at Mt. Cory in 1907. Three were organized in 1909 and one in 1910. A state-wide movement began in 1912, with the organization of 9 elevators that year, and reached its height in 1920 when 59 companies were organized.

The rapid development from 1912 was due principally to the efforts of other farm organizations and the widespread publicity of the agricultural press. As a result of the publicity given to the success of these early companies many companies were started without other outside help. The neighborhood store, where the farmer felt free to discuss his economic problems, had an important influence in starting a large number of companies from 1912 to 1924. The organization of elevators through the efforts of the local farmers during 1918-1921 was due partly to the general movement throughout the whole State.

Another important factor in the development was the influence of the Equity Union which began its organization work with elevators in 1914, when three companies were started. This was followed by a continuous campaign on the part of the Equity until the close of 1921, when promotional activities on the part of those interested had greatly slackened, due to the deflation of 1920. During this period the Equity Union had been instrumental in organizing 56 companies throughout the State.

With the organization of the Farmers' Grain Dealers' Association on March 13, 1916, at Toledo, another force was set in motion to promote the expansion of the elevator movement. The Farmers' Grain Dealers' Association was preceded by the organization of the "Farmers' Cooperative Association of Northwestern Ohio", which had assisted some new companies during their organization period but which may be considered as a part of the movement on the part of the farmers' elevators to extend the scope of their influence.

Through the secretary of the Farmers' Grain Dealers' Association many new companies were organized. Three were set up in 1916, the first year of the organization, and in 1918 to 1921 the secretary and officers of the state association assisted in organizing 39 companies.

The organization of local farm bureaus and their consolidation in the State Federation resulted in the promotion of 13 elevator companies, the first in 1917 and 11 in 1919 and 1920.

The Grange and Gleaners had but little direct influence in the organization of farmers' elevators, only three being directly due to their promotion. Indirectly, the granges led to the discussion of the possibilities of the farmers' elevator and in many cases this resulted in the formation of local companies.

ECONOMIC BACKGROUND FOR ORGANIZATION

During the years 1919 and 1920, 106 elevators were organized (Table 1). Several factors were important in bringing about this large increase during this short period. The Farmers' Grain Dealers' Association, the Equity Union, the Farm Bureau, and other interests were promoting cooperative endeavor with more enthusiasm and received better response from farmers than during the few years before 1920. The prosperity of the farmer due to a rising price level and his ability to invest part of his earnings was important (Fig. 2).

The rising price level during and immediately following the war made it possible for private and line elevator companies to take wider margins than they would ordinarily be able to secure. The

TABLE 1.—Data on 217 Farmers' Elevators in Ohio, When and by Whom Organized

Year	Total	Locally	Equity Union	Farmers' Grain Dealers	Farm Bureau	Grange	Gleaners
1904	1	1					
1905							
1906							
1907	1	1					
1908							
1909	3	3					
1910	1	1					
1911							
1912	9	8		1			
1913	5	4		1			
1914	15	11	3	1			
1915	10	5	5				
1916	15	6	5	3			1
1917	14	6	7		1		
1918	20	10	5	5			
1919	47	16	17	11	3		
1920	59	15	12	23	8	1	
1921	11	9	1			1	
1922	2	1	1				
1923	3	2			1		
1924	1		1				
Total	217	99	56	46	13	2	1

fact that the farmer knew that margins were wider than normal had an important influence which induced him to become a party in the local movement.

In a few instances the service which the farmers were able to get from private elevators was unsatisfactory. The change in the type of farming made demands on the elevator which the private operator was unable or unwilling to give. The only recourse for the farmers was to conduct the business themselves in such a way as to meet their requirements. In a few instances, unfair treatment which, for the most part, consisted of improper grading and short weights, was given as the reason for organization.

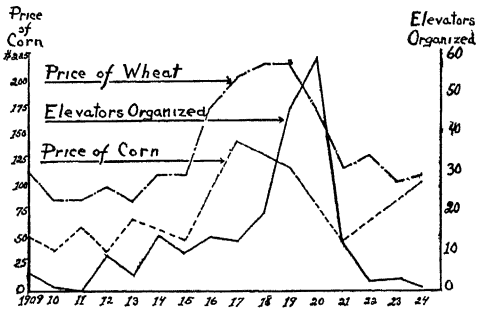


Fig. 2.—Farm prices of wheat and corn 1909-1924 and the number of farmers' elevators organized in Ohio during the period.

Following the deflation of 1920, but very few new companies were organized and most of these were in the process of organization preceding the deflation period. In 1923, three new companies started operation, and in 1924, one. From the standpoint of the growth of new companies, 1920 can be considered a turning point. It was the beginning of a settling down process during which period some of the weaker companies failed, some remained in operation even though they were insolvent, but on the whole it was the time when better business practices were adopted by many companies, which in the long run will make for the permanency of the movement.

The financial status of farmers' elevators as of January 1, 1925 showed that the grain elevators as a group had neither a surplus nor a deficit, while the merchandise elevators as a group had an average surplus of $1563. The condition of grain elevators varied from a deficit of $20,673 to a surplus of $32,070; that of merchandise elevators, from a deficit of $33,128 to a surplus of $52,754. The principal reasons for failure of farmers' companies may be summed up briefly as follows:

1. Lack of competent management,
2. Failure to raise adequate capital to meet the needs of the company,

3. The starting of a company where there was no real need of its service,
4. Investment of large capital in buildings where a much smaller investment might have meant success.

CHARACTERISTICS OF OHIO FARMERS' ELEVATORS

What is a Farmers' Elevator?—It is not an easy matter to give a precise definition of just what constitutes a farmers' elevator. If the name of the company were taken as the basis many more elevators would be included. If only elevators incorporated under the cooperative law were farmers' elevators, not more than one-half dozen companies would be included. A large majority of the companies are organized as regular stock corporations.

The main basis for determining what constitutes a farmers' elevator was the general purpose of the company. If the company had more than 25 farmer members and its general policy was that of efficient service to the community rather than a high rate of dividends on stock, it was included in the study as a farmers' elevator. Some companies which formerly had been operated by more than 25 farmer stockholders and were at the time of this study controlled by 8 or 10 farmers for their individual profit, were excluded.

Cooperative features.—Each elevator included in the study had one or more cooperative features that may be considered essential if it were to be classified as a cooperative elevator.

Voting.—Some consider the important feature of a cooperative elevator to be the method of voting and the restrictions placed on proxy voting. Of the 265 farmers' companies considered, 93 percent required that the "one man one vote" principle be followed; the remaining 7 percent allowed the voting on a share basis, which gives preference to financial investment rather than to membership. Proxy voting was permitted by 77 percent and prohibited by 23 percent of the elevators.

Limitation of dividends on stock.—Of 183 elevators reporting, 66 had no limit on the amount of dividends that could be paid to stockholders (Table 2).

TABLE 2.—Limitation of Stock Dividends by 183 Farmers' Elevators

Limit on dividends in percent	3	4	5	6	7	8	10	12	No limit	Not reported	Total
No. of elevators.....	3	4	8	29	11	42	8	1	66	12	183

A majority of the elevators placed a limit on dividends varying from 6 to 8 percent on the capital stock. A few companies placed the limit at 3 and 4 percent, while others extended the limit to as high as 10 and 12 percent.

Patronage dividends.—At the time most of the elevators were organized there was no legal provision requiring cooperative concerns to declare patronage dividends. Most of the companies were incorporated under the regular stock corporation act, which places no limit on the amount of dividends that could be paid on capital stock. The paying of patronage dividends by elevators had a slow growth but the tendency was for a larger number to adopt this method of dispersing the earnings of the company.

There was little uniformity in the method of paying patronage dividends. A lack of segregation of the grain and merchandise accounts in the accounting system led to the adoption of the value basis of distribution. Receipts of grain were reduced to the dollar basis rather than kept on the bushel basis. This necessitated the payment of patronage dividends on the dollar basis. Merchandise and grain in most companies were considered as so much patronage and the division of profits was made on this basis. A few companies, where their accounting system permitted, paid patronage dividends on merchandise based on the value of the merchandise purchased, and on grain on the number of bushels delivered.

In 1924, 5 percent of the elevators were paying patronage dividends to their stockholders. One company was paying patronage dividends to non-stockholders as well as to stockholders and five were paying patronage dividends to the employees. In two cases the elevators considered the salary of the employee as so much patronage and paid him at the same rate as the stockholders. In three the manager was paid a patronage dividend after a specified amount of net profit had been made.

Capitalization.—In 1924 the farmers of Ohio had invested $5,164,937 in the 216 elevators from which data were secured. If the investment in the other 49 companies averaged the same a total of more than $6,300,000 was invested in Ohio farmers' elevators. The average investment per elevator was $23,912.

The authorized capital of the companies varied from $5,000 to $200,000. Few of the companies were able to dispose of their authorized capital stock before starting operation. Due to the under estimate of the amount of capital needed, all sizes of elevators found it necessary to sell additional stock after starting operation,

Table 3. The 139 companies that had an authorized capital stock varying from $20,000 to $50,000 found it necessary to increase the amount sold 10 to 13 percent above the amount issued before starting operation.

TABLE 3.—Capitalization of Farmers' Elevators in Ohio

Capital stock originally authorized	Elevators	Average capital stock		Increase of stock issued
		Issued before starting operation	Now issued	
	No.			%
$60,000 and over	16	$42,790	$45,251	5.8
50,000—60,000	16	29,564	33,768	14.2
40,000—50,000	41	26,945	30,425	12.9
30,000—40,000	33	24,455	26,991	10.4
20,000—30,000	65	16,651	18,753	12.6
10,000—20,000	35	11,313	13,026	15.1
0—10,000	10	8,105	8,505	4.9
Total and average	216	21,429	23,899	11.5

Membership.—The fact that 202 farmers' elevators had a total membership of 32,765 farmers located in 61 counties, or an average of 162 members per elevator, represents the extent to which the movement had developed. On the assumption that the other 63 companies, from which data were not obtainable, had approximately the same average membership, more than 42,000 farmers were interested directly in the elevator business.

The regular stock corporation basis, on which most of the farmers' elevators were organized, as stated, permitted the elevators to sell stock to others than actual farmers or those owning farms. In 123 companies others than farmers were permitted to own stock, and in 31 companies ownership of stock was restricted to farmers. The average of ten members who were not farmers was composed of local bankers and business men who took an active interest in the welfare of the farmer.

In some cases the wise business counsel given by the so-called "outsiders" assisted the elevator in keeping out of financial difficulties. Many companies elected a local banker or business man on the board of directors. In not a single elevator could it be said that the business practices were controlled by others than the farmer stockholders.

By far the largest group of elevators had a membership varying from 100 to 150 members, Table 4. Six companies had fewer than 50 members and seven companies more than 350 members.

TABLE 4.—Ohio Farmers' Elevators Classified According to Membership

Number of members	Number of elevators
Below 50	6
50—100	43
100—150	56
150—200	34
200—250	24
250—300	15
300—350	7
Above 350	7

The board of directors of the companies varied from 5 to 30 members, the largest number of elevators having boards with 7 or 8 members. Holders of stock who were not farmers had a smaller proportionate representation on the board of directors than they did of the membership. Farmers composed 98 percent of the directorate of the elevators and others 2 percent.

Another feature of some of the companies, which demonstrates their motive, was the control of stock ownership. But few companies did not pay attention to the disposition of stock when a farmer moved out of the community or an estate was closed. A large proportion were interested in the disposition of stock so as to continue control in the hands of the producers of grain or the purchasers of merchandise. A few companies took options on stock and directed its resale.

Capacity of farmers' elevators.—The number of bins or cribs and the amount of storage space served as a satisfactory measure of ability to handle grain. The mere fact that an elevator has a given storage capacity is not a safe criterion on which to base the volume of business handled. Actual storage capacity varied from 5,000 to 100,000 bushels. Of 176 companies reporting, 133 had a storage capacity varying from 10,000 to 30,000 bushels. A few companies had a much larger capacity. A large number had too much capacity rather than too little to handle the day-to-day receipts. An elevator with a maximum capacity of 20,000 or less, with modern machinery, will handle adequately the business of most companies. Of the companies reporting 67, or 38 percent, had a capacity varying from 20,000 to 100,000 bushels, Table 5.

Of 240 elevators 215 were of frame construction, 15 concrete, 2 tile, and 8 brick and frame.

Manager.—A business to be successful must be well managed. The most important duty of the board of directors of a farmers' elevator is the selection of its manager. In the handling of the affairs of the local elevator, profit is not a true measure of success.

The element of speculation and luck may result in large profits in a given year. Managers were often hired as a result of profits secured over a short period rather than on their ability to handle the business in a successful manner. A manager of an Ohio elevator gave this short definition of what constitutes success; "A manager of an elevator must be able to make a profit for his stockholders when the market is declining as well as when it is rising."

TABLE 5.—Ohio Farmers' Elevators Classified According to Capacity

Capacity	Elevators	Average actual capacity	Average warehouse floor space
Bu.	*No.*	*Bu.*	*Sq. ft.*
Under 10,000	38	5,800	2,469
10,000 to 19,999	70	12,972	3,139
20,000 to 29,999	25	22,640	1,894
30,000 to 39,999	22	30,571	4,124
40,000 to 49,999	6	42,875	2,680
50,000 to 59,999	6	51,167	2,295
60,000 to 69,999	3	63,000	4,275
70,000 to 79,999	2	75,000	6,400
80,000 to 89,999	1	85,000	9,300
90,000 to 99,999	2	92,500	5,350

The manager occupies a very important position in the local community. He has daily contact with the customers of the company, his success may rest on his treatment of customers. He must be congenial and courteous to all with favors to none.

The supply of competent managers in the State is limited. The supply of experienced men must come from among private operators and their assistants or from other farmers' elevators. College trained men who will get experience under competent managers should furnish a larger supply of managers in the future. Many companies failed to see the necessity of securing men with practical experience. Prejudice against the private operator (in some cases unwarranted) and the belief that he would not work for the interests of the farmers who, in most cases, purchased his elevator, limited the number of experienced men secured for manager.

Competition in the elevator business in Ohio is keen. This necessitates careful expenditure of funds. Incompetent men are the most expensive. The difference between the salary which must be paid to secure efficient as compared to inefficient management is more than offset by the economies secured in plant operation and general buying and selling practices. The amount of salary demanded by a new manager is not a safe basis of selection. The salary most commonly paid elevator managers varied from $1600 to

$1800, Table 6. The salaries of many efficient managers were too low when compared to salaries received by others with less business ability.

TABLE 6.—Salaries Paid to Managers of Ohio Farmers' Elevators

Salaries	Number of manager
Up to $1000	4
$1000 to 1200	18
1200 to 1400	31
1400 to 1600	2
1600 to 1800	43
1800 to 2000	13
2000 to 2200	10
2200 to 2400	11
2400 to 2600	7
More than 2600	7
Total	146

There was a pronounced tendency frequently to change the management of the farmers' elevators, the average employment of a manager being from three to four years. Some companies had had one or more managers for each year of their operation. Incompetence or mismanagement was given by 76 companies as the reason for changing managers. Unwillingness of the board of directors to meet the salary offered by other companies caused 31 elevators to lose their managers. Interference by board of directors with problems which should be handled by the manager caused 25 managers to resign. Dishonesty, favoritism, or the personality of the manager resulted in the resignation of 26 managers.

Attempts were being made by 10 companies to assure the permanent tenure of the manager by giving him the right of stock ownership in the company. A few companies paid bonuses of varying amounts after a certain minimum profit was earned. This attempt to keep competent managers as permanent employees was on the whole working satisfactorily. That boards of directors needed to give more attention to the subject of securing and keeping competent managers was evident.

Bonds from their managers were required by 141 companies out of 208 reporting. The elevator company in most cases paid the premium on the bonds. Bonds varied in amount from $200 to $25,000, the most common amount being $5,000. The present cooperative law requires that the manager be bonded. The reason for bonding managers is to protect the elevators from misappropriation of funds. The value of the bond as a protection to many companies was lost because of the inadequacy of the records. Eighteen

companies did not have an annual audit. Thirty-three companies had trial balances at periods of three to six months. But few boards of directors took the time or had the desire to inspect carefully the records of the company. Bonding of the manager is a practice that every company should pursue, but unless adequate records are kept and closely supervised by the board of directors, bonding the manager becomes a useless expenditure of funds. It is the duty of the board to insist on records that will make possible the fixing of responsibility if funds be misappropriated.

A board of directors in selecting a manager should require that he have—

1. Practical experience in the grain business,
2. Unquestioned integrity,
3. Knowledge of grain rates,
4. Ability to meet and deal with farmer customers,
5. Knowledge of market outlets for Ohio grain,
6. Ability to keep records or supervise the keeping of records by others.

COST OF OPERATION[2]

The change in the production program of Ohio farmers from grain farming to livestock, dairy, truck-crop, and other types of farming had an influence on the kind of business conducted by elevators. In sections where diversified types of farming were commonly practiced the principal source of revenue of the elevator came from merchandise (feed, coal, fertilizer, etc.) instead of grain. In other sections grain was still the principal source of revenue. This variation in the types of commodities handled necessitated the division of the elevators into two groups when making the study of cost of operation. The division was based on whether the grain or merchandise business was the principal source of gross income. In the grain group a few companies had 90 percent of their gross income from the sale of grain, and in the merchandise group a few had 90 percent from merchandise. When an elevator received more than 50 percent of its gross income from grain it was placed in the grain group; when more than 50 percent from merchandise, it was placed in the merchandise group.

[2]Unless indicated to the contrary, the data dealing with costs of operation and financial and management problems were taken from audits of 85 elevators in which grain sales predominated and 80 elevators in which merchandise sales predominated. In some respects they show slight variation from the data of the 265 companies. In the analysis of costs of operation there were 10 merchandise elevators with a volume of business up to $74,999, 33 with a volume of $75,000 to $149,999, 22 with a volume of $150,000 to $224,999, and 15 with a volume more than $224,999. In the grain group there were 11 elevators with a volume of business up to $74,999, 33 with a volume of $75,000 to $149,999, 21 with a volume of $150,000 to $224,999, and 20 with a volume more than $224,999.

To make possible an analysis of the effect of volume of business on costs of operation and net profit, the elevators in both the grain and merchandise groups were divided into four classes as follows:

With sales up to $74,999
$ 75,000 to $149,999
$150,000 to $224,999
$225,000 and over

Costs in both groups were the actual expenditures and depreciation. No allowance was made for interest except that actually paid out for borrowed money. Labor and management were combined under the heading of "labor" because some elevators employed but one man, and in many cases the methods of accounting made it impossible to distinguish between labor and management costs.

Costs of elevator operation varied greatly in 1924. In the merchandise group the cost varied from 2.61 cents to 20.1 cents per dollar of sales, in the grain group from 2.3 cents to 11.8 cents per dollar of sales. The actual distribution of $100 paid out in expense by the grain and merchandise elevators shows clearly the variations in the different items of expense, Table 7.

TABLE 7.—Distribution of $100 Paid Out in Expense by 85 Ohio Farmers' Grain and 80 Merchandise Elevators

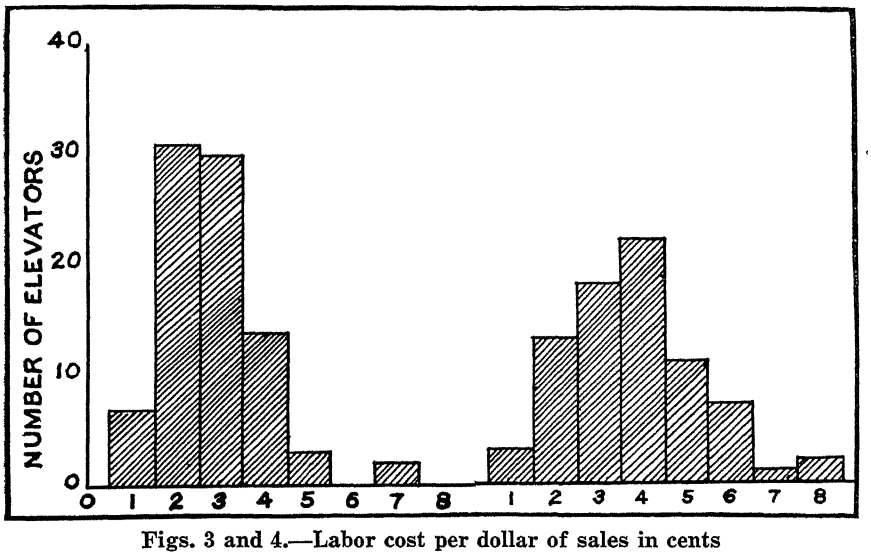
Sales	Labor	Interest	Depreciation	Bad debts	Light, heat, and power	Insurance	Rent and taxes	Miscellaneous	Total expense
85 elevators with grain predominating									
Up to $74,999.....	$41.11	$17.78	$ 8.89	$2.22	$6.67	$4.44	$5.56	$13.33	$100
$ 75,000 to 149,999.	42.86	14.28	8.57	2.86	5.71	2.86	4.29	18.57	100
150,000 to 224,999.	39.22	7.85	11.76	3.92	5.88	3.92	5.88	21.57	100
225,000 and over..	48.95	8.51	10.64	4.25	4.25	4.25	4.25	14.90	100
Average.....	43.55	11.29	9.67	3.22	4.84	3.22	4.84	19.37	100
80 elevators with merchandise predominating									
Up to $74,999.....	51.58	12.63	9.47	4.21	4 21	4.21	5.26	8.43	100
$ 75,000 to 149,999.	47.06	10.59	10.59	2.36	5.88	3.53	4.70	15.29	100
150,000 to 244,999.	49.35	9.09	7.79	2.59	6.49	3.90	3.90	16.89	100
225,000 and over..	48.98	6.13	8.16	2.04	6.13	4.08	4.08	20.40	100
Average.....	48.56	8.58	8.58	2 85	5.71	4.29	4.29	17.14	100

Labor was the largest single item of expense in the operation. In most cases it comprised 40 to 50 percent of all operating expenses. In the grain group of elevators with volume of sales up to $74,999, the labor cost per dollar of sales was 3.7 cents (Table 8).

TABLE 8.—Items of Expense in Cents per Dollar of Sales in 85 Ohio Farmers' Grain and 80 Merchandise Elevators

Elevators	Volume of sales	Total sales	Total expense	Expense in cents per dollar of sales								
				Labor	Interest	Depreciation	Bad debts	Light, heat, power	Insurance	Rent and taxes	Miscellaneous	Total
No.		Dol.	Dol.	Ct.	Ct.	Ct.	Ct.	Ct.	Ct.	Ct.	Ct.	Ct.
Grain predominating group												
11	Up to $74,999	60,712	5,455	3.7	1.6	.8	.2	.6	.4	.5	1.2	9.0
33	$75,000 to 149,999	106,748	7,491	3.0	1.0	.6	.2	.4	.2	.3	1.3	7.0
21	150,000 to 224,999	173,298	8,830	2.0	.4	.6	.2	.3	.2	.3	1.1	5.1
20	225,000 and over	268,795	12,557	2.3	.4	.5	.2	.2	.2	.2	.7	4.7
	Average	146,745	9,097	2.7	.7	.6	.2	.3	.2	.3	1.2	6.2
Merchandise predominating group												
10	Up to $74,999	54,928	5,147	4.9	1.2	.9	.4	4	.4	.5	.8	9.5
33	$75,000 to 149,999	118,667	10,094	4.0	.9	.9	.2	.5	.3	.4	1.3	8.5
22	150,000 to 224,999	169,823	13,152	3.8	.7	.6	.2	.5	.3	.3	1.3	7.7
15	225,000 and over	320,499	15,643	2.4	.3	.4	.1	.3	.2	.2	1.0	4.9
	Average	160,436	11,311	3.4	.6	.6	.2	.4	.3	.3	1.2	7.0

Those with a volume of $75,000 to $149,999, an increase of 80 percent in volume of sales, showed a labor cost of 3 cents per dollar of sales, or a decrease of 20 percent. Those with sales of $150,000 to $224,999, or an additional increase of 70 percent in sales, showed a labor cost of 2 cents, an additional decrease of 30 percent. With a further increase in sales the labor cost, 2.3 cents per dollar of sales, apparently increased slightly. Just why is not evident. The apparent increase probably was due to some inaccuracy in records or some unusual circumstance that made the labor cost per dollar of sales in the third class lower and in the fourth class higher than a fair average. Grinding or cleaning and conditioning grain could cause a high labor cost. The elevators in which merchandise sales



Figs. 3 and 4.—Labor cost per dollar of sales in cents

Fig. 3, left, 85 Ohio elevators in which grain sales predominated
Fig. 4, right, 80 elevators in which merchandise sales predominated

predominated showed more even reductions in labor cost as sales increased. However the labor cost per dollar of sales was about 25 percent higher than in the grain group. In the "merchandise" elevators with sales up to $74,999 the average labor cost was 4.9 cents per dollar of sales. In those with sales doubled, $75,000 to $149,999, the labor cost was 4 cents, or 20 percent less. In the third class, sales were increased 50 percent over the previous class but expenses were reduced only 5 percent. In the fourth class the sales were doubled over the previous class and expenses were reduced one-third. Table 8 shows these relationships quite clearly. Figure 3 illustrates the range and most common labor costs in the

two groups of elevators. Labor cost varied from 1 percent to 8.5 percent of the total sales. In the grain group most elevators had a labor cost of 1.5 to 3.5 cents and, in the merchandise group 2.5 to 4.5 cents per dollar of sales.

TABLE 9.—Number of Employees, Including Manager and Bookkeeper, and Average Sales per Employee, in Ohio Farmers' Elevators

Volume of sales	Number of employees per elevator		Average sales per employee	
	Grain predominating	Merchandise predominating	Grain predominating	Merchandise predominating
Up to $74,999	2.4	2.5	$25,297	$21,971
$75,000 to 149,999	2.9	3.5	36,810	33,905
150,000 to 224,999	3.5	4.8	49,514	35,380
225,000 and over	4.6	7.2	58,434	44,514
Average	3.5	4.4	41,927	36,463

Table 9 gives the average number of employees in the different groups of Ohio farmers' elevators and the average sales per employee. It will be noted that the number in the merchandise group was considerably larger than in the grain group. As an average the elevators in which merchandise sales predominated employed one more person than those in which grain sales predominated. The number of men employed was not an indication of labor efficiency; Table 9 shows the average yearly sales per employee. The men in the grain elevators did 10 to 20 percent more business per man than those in merchandise elevators. This was because of the larger number of small sales necessary in the merchandise business. Labor was utilized much more efficiently in the elevators in which there was a large volume of business. This may have been due in part to more large sales, which required less labor per dollar of sales than small sales.

INTEREST

Next to labor, interest cost per dollar of sales was of most importance. The average interest cost per dollar of sales was 0.6 cent, or about 10 percent of the total expense. The highest interest cost per dollar of sales (1.6 cents) was found in the group of elevators in which grain sales predominated, with sales up to $74,999, as is shown in Table 8. The lowest interest cost per dollar of sales (.3 cent) was found in the group in which merchandise sales predominated, with sales of $225,000 or over. A certain charge for interest as an operating cost is fair, but in the case of many

elevators the interest cost was high, not because of poor management but because of lack of adequate capital. It would be unfair to criticise a manager because of a high interest cost when it was necessary to pay interest on money borrowed to pay for part of the elevator equipment and all of the working capital, while another manager had all the fixed assets and a part of the working capital provided by the stockholders. The records that were available did not separate interest expense on that basis. The high interest cost in the elevators which did a relatively small volume of business was due in part either to inadequate initial capitalization or to subsequent losses. Those elevators having a low volume of sales and low turnover (Table 10) had greater difficulty in reducing the interest charge than those with a higher turnover. Elevators that make a profit can remedy their lack of capital by recuperating losses and building up surpluses. Lack of judgment in keeping accounts receivable at a reasonable ratio to sales was the cause of part of the interest charge. The elevators with a low volume of sales had a higher percentage of accounts receivable than those with a larger volume (Table 11).

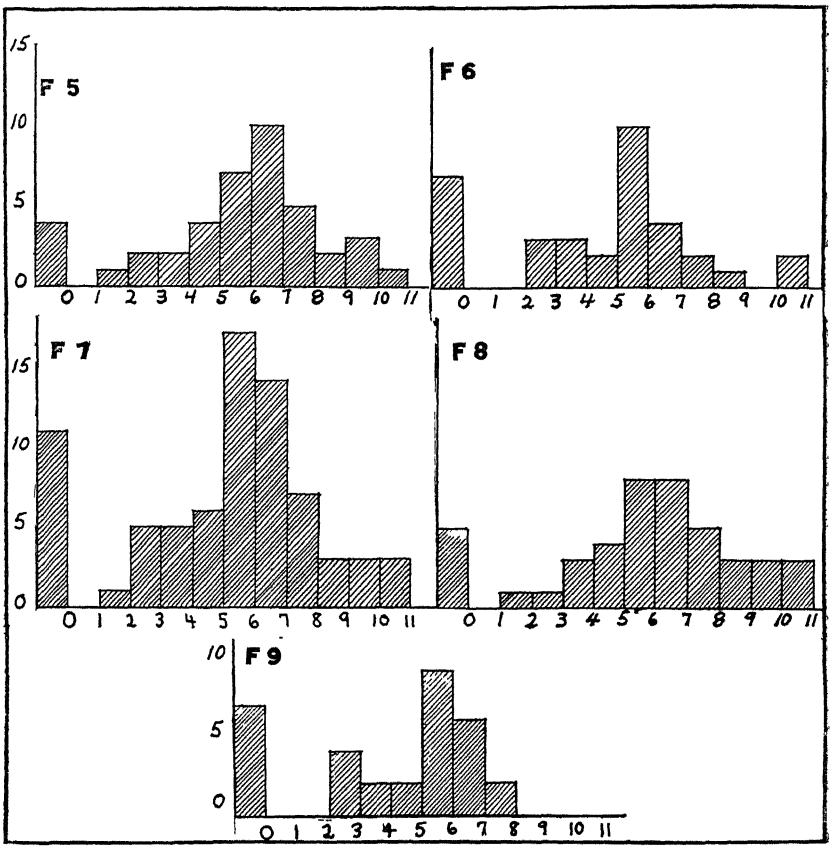
TABLE 10.—Effect of Turnover of Assets on Expenses—Average of 85 Ohio Farmers' Grain and 80 Merchandise Elevators

Volume of sales	Expense		Turnover				Total sales	
			Fixed assets		Total assets			
	Sales	Decrease	Sales	Increase over first group	Sales	Increase	Actual	Increase
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Dol.	Pct.
Grain elevators								
Up to $74,999	9.0	0	4.3	0	2.0	0	60,712	0
$75,000 to 149,999	7.0	22	5.0	16	2.8	40	106,748	72
150,000 to 224,999	5.1	43	8 1	88	3.7	85	173,298	185
225,000 and over	4.7	48	10.2	136	4.8	140	268,795	343
Merchandise elevators								
Up to $74,999	9.9	0	4.2	0	2.0	0	54,928	0
$75,000 to 149,999	8.5	14	5.9	40	2.8	40	118,667	16
150,000 to 224,999	7.7	22	6.1	45	3.1	55	169,823	209
225,000 and over	4.9	51	9.6	129	4.6	130	320,499	483

DEPRECIATION

Depreciation was the third largest item of expense. The figures presented in Table 8 are for the amounts of depreciation usually set up by the elevator accountants or auditors and not an estimate of the actual amount. Figures 5, 6, 7, 8, 9 show the per-

centage of fixed assets charged off for depreciation. By comparing Figures 5 and 6 it seems, as a rule, that the elevators in which merchandise sales predominated charged off larger amounts for depreciation. There were more elevators in the grain group that set up no reserve for depreciation. The commonest amount charged off for depreciation was between 5 and 7 percent of fixed assets (Figure 7). There seemed to be a tendency for elevators that had surpluses to charge off larger amounts for depreciation than were charged off by elevators that had deficits, a large portion of those elevators having deficits set up no reserve for depreciation (Figs. 8 and 9).



Figs. 5—9.—Rates of depreciation on fixed assets of Ohio farmers' elevators

The number of elevators is indicated at the left and the rate of depreciation charged off below each figure

F. 5.—Elevators in which merchandise sales predominated
F. 6.—Elevators in which grain sales predominated
F. 7.—F. 5 and F. 6 combined
F. 8.—Elevators that had surpluses
F. 9.—Elevators that had deficits

Types of buildings and equipment caused the variation in the amount set up for depreciation. There was no uniformity in the percent charged off for depreciation on buildings and equipment of the same general type.

BAD DEBTS

The loss from bad debts was relatively small when considered with the other items making up total expense. When the relationship between bad debts and accounts receivable are considered, their importance as an element of cost is more apparent. The apparent smallness of the items making up the total which must be charged off each year may result in a false sense of security. Accountants usually considered accounts over one year old and inactive accounts of questionable value. Viewing the items of expense in their relation to total sales of the company, there seems to be less relation between volume of sales and cost of bad debts per dollar of sales than with the other items of expense (Table 8).

TABLE 11.—Accounts Receivable and Their Relation to Merchandise Sales

Sales	Average merchandise sales Dol.	Average accounts receivable Dol.	Accounts receivable Pct.	Losses from bad debts Pct.
Merchandise predominant				
Up to $74,999	38,033	5,262	13.8	3.8
$75,000 to 149,999	79,786	7,502	9.4	3.6
150,000 to 224,999	109,571	8,544	7.8	3 8
225,000 and over	202,053	13,715	6.8	2.0
Average	105,583	8,619	8.2	3.0
Grain predominant				
Up to $74,999	25,789	5,352	20.8	2.0
$75,000 to 149,999	35,806	5,962	16.7	3.0
150,000 to 224,999	48,365	7,960	16.5	4.6
225,000 and over	52,927	9,153	17.3	4.4
Average	41,123	7,543	18.4	3.7

Accounts receivable equal 100%.

Table 11 shows the importance of bad debts arising from merchandise sales. Five thousand dollars seemed to be the minimum amount of credit that grain and merchandise elevators must carry on their books. In comparing the accounts receivable with total merchandise sales it is readily apparent that the smaller elevators had a higher percentage of total merchandise sales on the books than the larger companies. The merchandise elevators apparently had given more attention to the credit problem than had the grain

elevators. The weighted average of accounts receivable of the merchandise elevators was $8,619, with weighted average sales of merchandise of $105,583; while the weighted average of accounts receivable in the grain elevators was $7,573, with sales of $41,123. The comparison is more readily apparent when one considers that 8.2 percent of the merchandise sales were charged in merchandise elevators and 18.4 percent in the grain elevators.

The percentage of charge accounts collectible was the serious side of the question. In the merchandise group from 2 to 3.8 percent of all accounts charged on the books of the elevator were without value, while the weighted average was 3 percent. In the grain group the percentage uncollectible varied from 2 to 4.6 percent, with a weighted average of 3.7 percent (Table 11).

In addition to the loss from bad debts, the cost of accounting incurred through the carrying of charge accounts and the expense of making collections should be added to these costs in figuring the net cost of bad debts. However, actual figures on the cost of accounting and collecting incurred as a result of charge accounts were not available. Competent accountants estimate a cost varying from 3 to 5 percent of the total accounts receivable. The net cost of bad debts on the average accounts receivable carried by elevators, would vary from 5 percent to 10 percent if this estimate of accounting and collection costs is accurate.

LIGHT, HEAT, AND POWER

Light, heat, and power, the fourth largest item of expense, varied in almost inverse ratio to the volume of sales. Irregularities were due largely to differences in types of equipment and service rendered. Table 8 shows that this cost varied from 0.2 to 0.6 cent per dollar of sales. Light, heat, and power cost slightly more in the groups in which merchandise sales predominated.

INSURANCE

Insurance cost per dollar of sales varied from 0.2 to 0.4 cent per dollar of sales. It was somewhat higher in the merchandise group. The cost of insurance per dollar of sales in the class below $75,000 was twice its cost in the class with sales above $225,000. In many cases this was due to the cost of insurance on fixed assets that were not used to capacity. The size of the inventory of grain and merchandise, types of construction, and kinds of insurance carried caused the variation of insurance cost per dollar of sales.

RENT AND TAXES

The cost for rent and taxes per dollar of sales ranged from 0.2 to 0.5 cent. This item was also influenced by excess plant capacity. There was very little difference between the grain and merchandise groups in the cost per dollar of sales. The cost for rent and taxes per dollar of sales in the elevators with sales up to $74,999 was two and one-half times that of those with sales of $225,000 or more.

MISCELLANEOUS

The term miscellaneous as used here includes repairs, advertising, market information, freight and express, auditing, legal, office supplies, and other miscellaneous items. The reason for including all these items in this group was due to the impossibility of sorting out the individual items. None of these items are important in size. They are important in that these expenditures did not always net an equivalent value or because their absence indicated poor management. Advertising may be valuable, but many of the kinds used by elevators were of questionable value. Lack of an audit or lack of adequate market information may have resulted in losses.

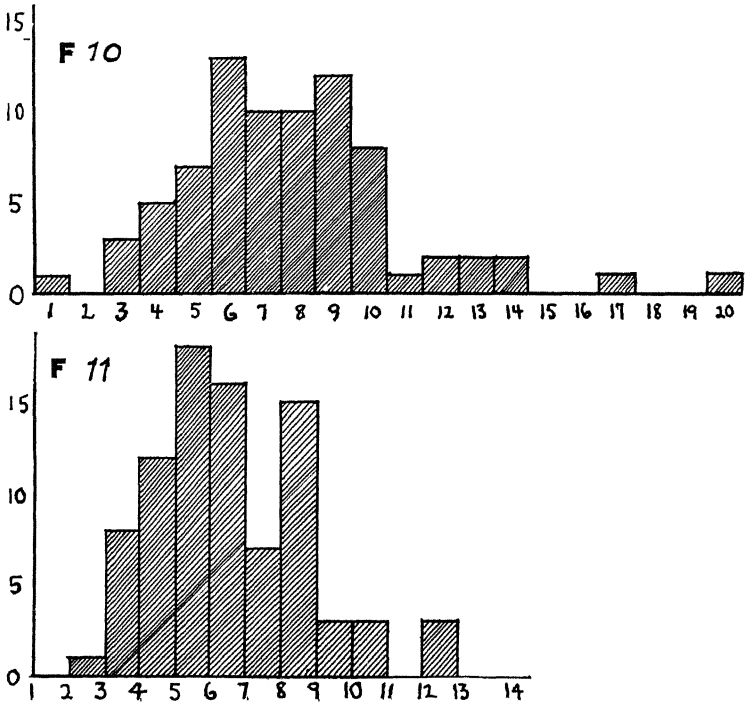
TOTAL EXPENSE

The sum of all these items, Labor, Interest, Depreciation, Light, Heat and Power, Bad Debts, Insurance, Rent and Taxes, and Miscellaneous, was the total operating expense. Operating expense plus net profit equals the operating margin. In the merchandise group most margins were from 5.5 to 10.5 cents per dollar of sales (Fig. 10). In the grain group 80 percent of all margins were between 3.5 and 8.5 cents per dollar of sales (Fig. 11). A study of Figures 12, 13, and 14 and Table 8 shows a number of interesting facts. Increase in the volume of sales reduced the cost per dollar of sales. Cost of sales were about 1 cent less per dollar of sales in the groups of elevators in which grain sales predominated. Most of that difference was due to differences in labor costs.

Even though expenses were less in those elevators in which the volume of sales was large, the margin of profit did not necessarily increase. In Table 12 it will be noted that expenses ranged from 9.4 cents per dollar of sales in the merchandise group with sales below $75,000 to 4.7 cents per dollar of sales in the grain group with sales of $225,000 or over. In the former the gross gain was 11.7 cents and net profit 2.4 cents per dollar of sales; in the latter, 6.3 cents and only 1.6 cents, respectively, per dollar. The difference in

TABLE 12.—Gross Gain, Net Gain and Expense per Dollar of Total Sales in 85 Farmers' Elevators in Which Grain Predominated and 80 in Which Merchandise Predominated

Sales	Gross gain		Net gain		Total expense	
	Grain	Merchandise	Grain	Merchandise	Grain	Merchandise
Up to $74,999	11.6	11.7	2.6	2.4	9.0	9.4
$75,000 to 149,999	8.8	10.8	1.8	2.3	7.0	8.5
150,000 to 224,999	7.8	10.1	2.7	2.3	5.1	7.7
225,000 and over	6.3	7.3	1.6	2.4	4.7	4.9
Average	8.4	9.4	2.2	2.4	6.2	7.0



Figs. 10 and 11.—Relation of expense to sales

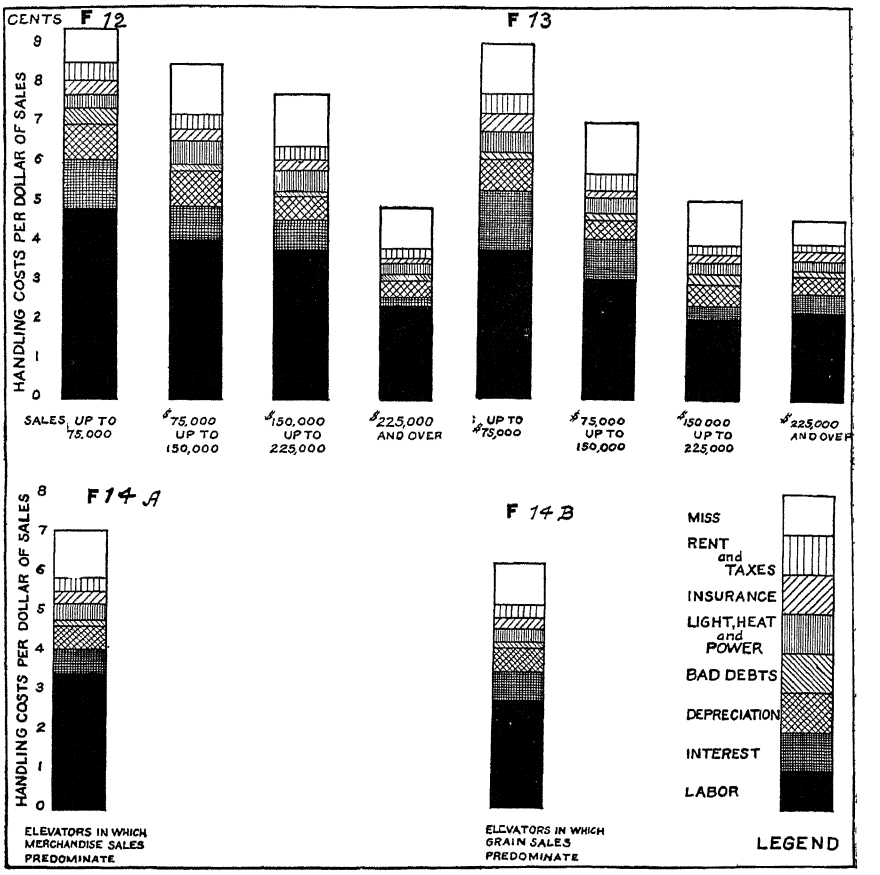
The number of elevators is indicated at the left and the expense per dollar of sales in cents below each figure

F. 10.—80 Ohio farmers' elevators in which merchandise sales predominated

F. 11.—85 Ohio farmers' elevators in which grain sales predominated

net profit was due to difference in gross gain. This difference would mean a considerable saving to the patron even though the elevator made the most profit in the first group. The difference in gross margin was due to different conditions, possibly lack of desire on the part of the elevator management whose aim was service at low cost rather than large profits. Part of the difference could have been due to the commodities handled. No doubt part was due to an attempt to increase income rather than to reduce expenses.

The presence of competition from mills and independent and line elevators, determined the margin the farmers' elevator was able to get and limited its net profit.



Figs. 12—14.—Variation in cost of operation in Ohio farmers' elevators

F. 12.—Merchandise elevators
F. 13.—Grain elevators
F. 14.—Comparison of cost of operation in 80 merchandise (A) and 85 grain (B) elevators

EFFECT OF MERCHANDISE ON EXPENSE

The influence of merchandise on expense per dollar of sales is not fully shown in the cost analysis in Table 8. The method of division between merchandise and grain elevators in the comparison was based on whether a given elevator had 50 percent or more of its total sales derived from the sale of grain or merchandise. In order to show more clearly the difference between costs of handling grain and merchandise, fourteen elevators were selected that had approximately the same volume of business. In the merchandise elevators 75 percent of total sales represented merchandise and in the grain elevators 75 percent represented grain.

TABLE 13.—Comparison of Gross Profit, Total Expense, Net Profit, and Turnover of Total Assets of Seven Elevators in Which Merchandise Constituted More Than 75 Percent of Total Sales With Seven in Which Grain Constituted More Than 75 Percent of Total Sales

Average of 7 elevators in which	Total sales	Merchandise sales	Gross profit	Total expense	Net profit	Turnover of total assets
	Dol.	*Dol.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
75 percent of sales were merchandise.....	110,172	92.088	11.7	9.5	2.2	3.1
75 percent of sales... .. were grain	97,867	22,544	7.9	6.2	1.7	2.6

The main difference between the merchandise and grain elevators is found when the relation of gross profit and total expense to total sales is analyzed (Table 13). In the merchandise group the gross profit was 11.7 percent in the grain group 7.9 percent of sales, or a difference of 3.8 percent. The expense in the merchandise group amounted to 9.5 percent, in the grain group 6.2 percent of total sales, or a difference of 3.3 percent. The itemized expense of these two groups is shown in Table 14.

TABLE 14.—Comparison of the Items of Expense, as Percentage of Sales, in Seven Elevators in Which Merchandise Constituted Over 75 Percent of Total Sales With Seven Elevators in Which Grain Constituted Over 75 Percent of Total Sales

Average of 7 elevators in which	Labor	Interest	Depreciation	Bad debts	Light, heat, and power	Insurance	Rent and taxes	Miscellaneous	Total
75 percent of sales were merchandise.....	4.5	1.1	.8	.3	.7	.2	.5	1.4	9.5
75 percent of sales were grain..	2.7	1.1	.6	.1	.5	.3	.3	.6	6.2

The main difference in expense between these two groups was in the cost of labor and miscellaneous expense. It cost the merchandise elevators 1.8 cents more in labor and 0.8 cent more in miscellaneous expense to sell $1 worth of commodities (grain and merchandise) than it did the grain elevators. The other items of expense are so nearly the same that little distinction can be made between the two types of elevators.

The relation of turnover of total assets to total sales in the merchandise group was 3.1 times, while in the grain group it was 2.6 times. The shift from grain as a principal source of income to merchandise in the majority of Ohio elevators with its resultant increase in costs, made necessary the adjustment of margins if the elevator was to operate at a profit.

RELATION OF TURNOVER OF FIXED ASSETS TO NET PROFIT

Changing conditions in the type of farming in some sections of Ohio resulted in handicapping many elevators in their attempt to increase their volume of sales. Many elevators were constructed to handle a large volume of grain. The shift in the type of farming has been from grain to livestock, truck crops, dairying and other types. The importance of the problem of increasing sales with a given investment in fixed assets with the hope of reducing expense per unit of sales, deserves the attention of executives of elevator companies.

In Table 10 the effect of increased sales on expense per unit of sales is evident. In those elevators in which grain sales predominated, the group with sales up to $74,999 had an expense of 9 cents per dollar of sales. With this group as a base, since it had the greatest cost per unit of sales and the smallest turnover of fixed and total assets, there was a noticeable decrease in expense per unit of sales in each of the following groups. The group having sales from $75,000 to $149,999 had an expense of 7 cents per dollar of sales. The volume of sales of the group increased 72 percent which resulted in a decrease of 22 percent in expenses per dollar of sales. The group with sales from $150,000 to $224,999 had an expense per unit of sales of 5.1 percent of total sales. The volume of sales of the group increased 118 percent as compared with the smallest group. Expenses decreased 43 percent. The group with the largest volume of sales, over $225,000, had an expense of 4.7 cents per dollar of sales, a decrease of 48 percent from the smallest group. The sales in this group were 343 percent greater than the sales of the smallest group.

In the elevators in which merchandise sales predominated, the condition was much the same. In the group with sales up to $74,999 the turnover was 4.2 times the fixed assets. Expenses were 9.9 cents per dollar of sales. In the next larger group the turnover was 40 percent greater and expenses 14 percent less than in the first group. In the group with sales from $150,000 to $224,999, the turnover was 45 percent greater and expenses 22 percent less than in the first group. In the largest group the turnover was 129 percent greater and expenses 51 percent less than in the smallest group.

The turnover of total assets and the total sales per elevator are given in Table 10. Due to the records used, the turnover of total assets is of little value. The audits were taken at different times during the year, thus the inventories may be far from the actual average inventories for the year. Excess inventories can be reduced but excess plant capacity cannot be readily reduced.

TABLE 15.—Rate of Turnover of Fixed Assets as it Affected Expense and Profit in a Northwestern Ohio Elevator in 1920-1924

Year	Turnover of fixed assets	Total expense	Gross gain	Net gain	Total sales
		Pct.	*Pct.*	*Pct.*	*Dol.*
1920	5.1	6.9	2.2	−4.7	81,635
1921	4.1	7.7	6.5	−1.2	73,062
1922	6.8	5.7	4.2	−1.5	119,804
1923	6.7	6.6	13.3	6.7	126,306
1924	8.2	5.5	10.7	5.2	194,231

*No reserves included.
†Adequate reserves have not been deducted.

The relation existing between the rate of turnover as given in Table 10 dealt with the averages for the several groups for the year 1924. The same relationship existed with an individual elevator over a five-year period as shown in Table 15. From 1920 to 1924 the volume of sales increased four out of the five years. The turnover of fixed assets shows an increase three out of the five years. An increase in the turnover of fixed assets resulted in a reduction of expense per dollar of sales. In 1921 the turnover of fixed assets was lowest while expense per dollar of sales was highest for any of the five years. In 1924 the turnover of fixed assets was greatest and the expense per dollar of sales was lowest. The ability and judgment of the manager are reflected in the gross-gain relation to total sales. The gross margin was low in 1920, 1921, and 1922. It was too low to cover the expense, hence the loss for those years. A change in management in 1923 resulted in an increase of about three times in the gross margin, and a profit for the year's operation. In 1924 the margin was reduced but still gave a satisfactory profit for the year.

The averages for the several groups are given in Table 10. The turnover of fixed assets, expense, and gross and net profit in percentage of sales of six elevators in each group are given in Table 16 to show their relationship. For the purpose of making comparisons, the three elevators lettered A, B, and C, with lowest and the three, X, Y, and Z, with highest total expense in percentage of sales are

TABLE 16.—Rate of Turnover of Fixed Assets as it Affected Expense and Profit in Elevators in the Two Groups

Volume of sales	Elevators in which grain predominated				Elevators in which merchandise predominated			
	Turnover of fixed assets*	Total expense†	Gross profit†	Net profit†	Turnover of fixed assets	Total expense†	Gross profit†	Net profit†
Up to $74,999		*Pct.*	*Pct.*	*Pct.*		*Pct.*	*Pct.*	*Pct.*
A‡	5.9	4.7	10.0	5.4	3.1	5.4	5.7	0.3
B	14.3	7.1	8.7	1.5	4.7	7.7	7.9	0.2
C	4.7	8.4	8.5	0.2	4.7	7.8	13.8	6.0
X	2.0	10.3	9.9	−0.4	6.4	9.4	9.9	0.4
Y	1.8	10.5	10.3	−0.1	3.0	13.5	13.6	0.1
Z	2.5	17.0	19.7	2.7	1.3	20.0	26.6	6.6
$75,000 to $149,999								
A	13.7	2.3	3.9	1.6	10.3	5.4	7.5	2.1
B	15.4	3.5	5.7	2.3	7.6	5.7	12.6	6.9
C	12.1	4.8	4.9	0.1	9.4	6.1	9.2	3.2
X	5.1	10.2	13.6	3.4	3.2	12.5	16.9	4.4
Y	2.4	11.8	13.3	1.5	11.1	13.7	19.9	6.2
Z	9.1	12.4	17.1	4.7	12.1	16.7	18.5	1.8
$150,000 to $224,999								
A	5.5	2.8	2.4	−0.4	14.6	4.2	8.9	4.7
B	12.0	3.7	7.9	4.2	10.0	4.8	6.4	1.6
C	9.1	3.9	7.5	3.6	8.9	5.7	7.9	2.3
X	7.1	6.4	11.4	5.0	9.6	9.4	12.6	3.1
Y	16.7	7.7	8.4	0.7	5.0	9.7	12.7	3.0
Z	5.5	7.9	10.2	2.3	4.8	10.6	12.1	1.5
$225,000 and over								
A	19.2	3.2	3.9	0.7	17.4	2.6	4.6	2.0
B	17.2	3.5	4 7	1.2	14.1	3.0	3.9	0.9
C	8.5	3.8	5.4	1·6	39.0	3.4	5.5	2.1
X	6 1	5.6	5.5	−0.1	7.8	6.3	10.4	4.1
Y	6.4	5.7	10.9	5.2	18.3	6.7	10.3	3.6
Z	6.0	6.4	6.9	0.5	7.1	10.4	8.3	−2.1

*Turnover of fixed assets was determined by dividing the total sales by the investment in fixed assets.

†Total expense, gross profit, and net profit are expressed in percent of sales.

‡A, B, and C, elevators with lowest expense in percentage of sales; X, Y, and Z, elevators with highest expense in percentage of sales.

given. In this table it may be seen that there were certain exceptions where an elevator with a high rate of turnover may have had a high expense or one with a low turnover a low expense per unit of sales. However, in any group the three elevators with the lowest expense the turnover was higher than in the three with the highest expense.

The gross profit varied from 2.4 cents to 26.6 cents per dollar of sales. For the most part, gross margins were just ample to cover expenses and allow a slight margin of profit. Most of the losses were incurred by those elevators that had a high expense per unit of sales.

A high turnover of fixed assets was an indication of the efficient use of labor and equipment which resulted in a low cost of operation.

Some elevators with a high turnover of fixed assets also had a high rate of expense in relation to sales. In most cases this was due to the employment of too much labor for the business handled. Inefficiency in the utilization of equipment was caused by the change taking place in agricultural production. The increase in the production of dairy products, meat, truck crops, and poultry in sections formerly given over to the production of grain resulted in high equipment costs in elevators originally constructed for the movement of a large volume of grain. In many cases of this kind it was difficult to have a high turnover of fixed assets.

In communities where there still remained marketable surplus of grain, it was necessary to maintain the equipment, the maintenance cost being distributed over a lesser quantity of grain than previously.

SURPLUS OR DEFICIT, NET GAIN, AND TOTAL SALES

The status of Ohio farmers' elevators, most of which were organized in 1918-1920, Table 1, was the result of conditions over which the stockholders or officers of these companies had little control. The purchase of many elevators just previous to the deflation in prices of commodities handled on the basis of value then prevalent, necessitated securing margins above what competition would permit. This resulted in many elevators' operating at a loss for several years.

Many companies were unfortunate in the kind of management secured and many possessed inadequate facts upon which a sound business policy could be built.

The 80 merchandise elevators came through this difficult period in better financial condition than did the 85 grain elevators (Table 17).

Volume of sales, combined with a sound business policy, was of great importance in bringing a company from a condition of deficit to one of surplus.

TABLE 17.—Surplus or Deficit, Net Gain, and Total Sales as Average of Groups, January, 1925

Sales	Surplus (+) or deficit (—) 1925		Net profit 1924		Average sales 1924	
	Grain	Merchandise	Grain	Merchandise	Grain	Merchandise
Up to $74,999	—$2421	—$981	+$1574	+$1302	$60,712	$54,928
$75,000 to 149,999	—3284	—1204	+1932	+2705	106,748	118,667
150,000 to 224,999	+3051	+2029	+4709	+3937	173,298	169,823
225,000 and over	+4079	+9078	+4366	+7792	268,795	320,499
Average	—30	+1563	+3273	+3819	146,745	160,436

The surplus or deficit condition was the result of the operation of these companies since organization and includes the year 1924. Net profit and average sales is for the year 1924.

The companies with a volume of sales below $150,000 of both merchandise and grain had, on the average, a deficit as a result of their operations over a period of years and including the year 1924. The size of the deficit was greater in the grain group than in the merchandise group. The companies with sales over $150,000, on the average, during this same period of operation had created a surplus.

COOPERATIVE LINE ELEVATORS

There were nine Ohio farmers' elevator companies operating more than one plant. It is of interest to know what the advantages and disadvantages of such an organization are. It is unfair to compare these elevators with those having the same volume of business handled through a single plant. In Table 18 operating expenses

TABLE 18.—Ohio Farmers' Elevators Operating Two and Three Plants Compared With a Group of Elevators Having the Same Amount of Sales per Plant

Elevator	Average sales per elevator	Expense items and net gain in percentage of sales									
		Labor	Interest	Depreciation	Bad debts	Light, heat, and power	Insurance	Rent and taxes	Other	Total expenses	Net gain
Average of 18	*Dol.* 106,748	*Pct.* 3.03	*Pct.* 1.03	*Pct.* 0.56	*Pct.* 0.17	*Pct.* 0.36	*Pct.* 0.24	*Pct.* 0.34	*Pct.* 1.29	*Pct.* 7.02	*Pct.* 1.81
A	149,000	3.25	.39	.....	.....	.....	.29	.26	.50	4.69	.57
B	95,000	2.89	.50	.80	.....	.....	.38	.22	.55	5.34	1.43
C	125,000	2.92	.72	.57	.14	.69	.17	.29	.72	6.22	—2.09
D	77,500	2.09	2.00	.....	.06	.....	.30	.16	1.77	6.38	1.74
E	85,000	3.37	.46	1.05	.10	.79	.09	.26	.35	6.47	.40
F	91,000	3.56	.85	.32	.06	.36	.32	.39	1.36	7.22	1.37
Average of 6	103,666	3.11	.82	.46	.06	.31	.26	.26	.88	6.05	.57

and net income in percentage of sales of six of these elevators are compared with the average of 18 elevators having approximately the same amount of sales per plant. The sales per elevator in this group ranged from $75,000 to $150,000. Five of the six cooperative line elevators had lower expenses than the average of the group having about the same volume of business per plant. This is not a fair comparison since the line elevator would seldom have its business evenly divided among its plants, but is a fairer comparison than with those elevators having the same total volume of business. There seemed to be a greater tendency for several elevators with grain sales predominating to be under one management than for elevators with merchandise sales predominating.

The advantages and disadvantages of line elevators, as shown by Table 18, may be summed up as follows:

Advantages:

1. A saving in labor cost per dollar of sales,
2. A saving in interest cost per dollar of sales,
3. A saving on bad debts. This, possibly, was due to the fact that sub-managers had strict orders to keep credit extension to a minimum and carefully select those to whom credit was extended.

Disadvantages:

1. A tendency to over-laborize the sub-plants.

SELLING PRACTICES

The number of available outlets through which grain may be marketed complicates the problem of where to sell, when to sell, and how to sell grain.

WHERE TO SELL

In 1924 there were 420 flour and feed mills in the State (Fig. 15). Table 19 shows the manufacturing capacity of Ohio mills. Three-fourths of the mills were of such size that they were able to secure an ample supply of grain from their immediate localities to meet their manufacturing requirements. One-fourth

TABLE 19.—Milling Capacity of Ohio Mills in Barrels

Daily capacity	Number of mills
Up to 75 barrels	258
75 to 149 barrels	92
150 to 299 barrels	34
Over 300 barrels	22

required more grain than could be secured locally, which necessitated the buying of grain from country elevators, through "track buyers" or through the terminal market, thus furnishing a potential market for the movement of the surplus grain of the elevator.

A variety of grains was used by Ohio mills for manufacturing purposes (Table 20).

TABLE 20.—Grains Ground by Ohio Mills, Total Number of Mills, and Number That Ground Each Grain*

Total number	Winter wheat	Spring wheat	Corn	Oats	Barley	Buckwheat	Rye
389	379	66	196	261	135	3	162

*Directory of Ohio Flour Mills published by Ohio Millers' Association 1925.

The storage capacity of the mills varied from 200 bushels for small mills to 1,250,000 for the largest mills. The most common storage capacity was 10,000 bushels or under per mill, Table 21. The total storage capacity of all mills in 1925 amounted to 10,220,000 bushels. Knowing what the nearby market needs is of vital importance if the manager is to satisfactorily solve the problem of "where" to sell grain. A large proportion of the larger mills circularized the elevator periodically with "on track" or "to arrive" bids which the elevator might accept up to the opening of the market on the following day.

TABLE 21.—Grain Storage Capacity of Ohio Mills

Capacity—bushels	Number of mills
9,999 and under	235
10,000 to 19,999	96
20,000 to 29,999	31
30,000 to 39,999	16
40,000 to 49,999	3
50,000 to 99,999	10
100,000 and over	20

In 1924, 36 brokers or "track" buyers were located in 15 cities of the State (Fig. 15). Many of these brokers were representatives of exporting concerns located at Buffalo and other eastern and southern points. During the heavy movement of grain immediately following harvest, the brokers circularized the elevators with "on track" or "to arrive" bids subject to acceptance up to the opening of the following day's market.

In addition to the mills and the brokers, there were two organized grain markets to which the elevator might ship or sell his grain—Toledo on the north and Cincinnati on the south. The flow

of milling wheat and feed to the south was made through the brokers located in different parts of the State, through the organized market at Cincinnati, or by a direct contact with the southern consuming market. Toledo and Buffalo furnished the most commonly used terminal outlets to the east. The broker, however, with eastern contacts also furnished an outlet to eastern mills, feeders, and exporters.

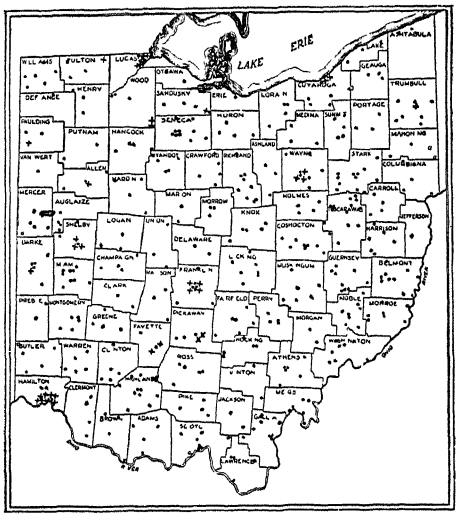


Fig. 15.—Location of mills* (.) and of track buyers (+) in Ohio

*Directory of Ohio Flour Mills published by Ohio Millers' Association, 1925

A few of the larger elevator companies, in solving the problem of where to sell, made direct contacts with mills and feeders located in the east and south (Figs. 16, 17, 18). This wide distribution from a single elevator required a large volume to warrant the expenditure of time and money necessary to make direct contacts.

With the large number of outlets available to the local elevator, the "where-to-sell" problem, if it is to be solved satisfactorily, will demand the constant attention of the manager. Local competition for grain is too keen to permit the following of the line of least resistance as to "where shall I sell?" That some local managers were capable of solving this problem is shown in Table 22. All of the corn moved out of the elevator went to feeders or millers in eastern and southern states—54 cars were shipped to 28 cities in Pennsylvania, 24 to 12 cities in New York, 9 cars to 5 cities in Virginia and West Virginia, and 2 cars to Washington D. C.

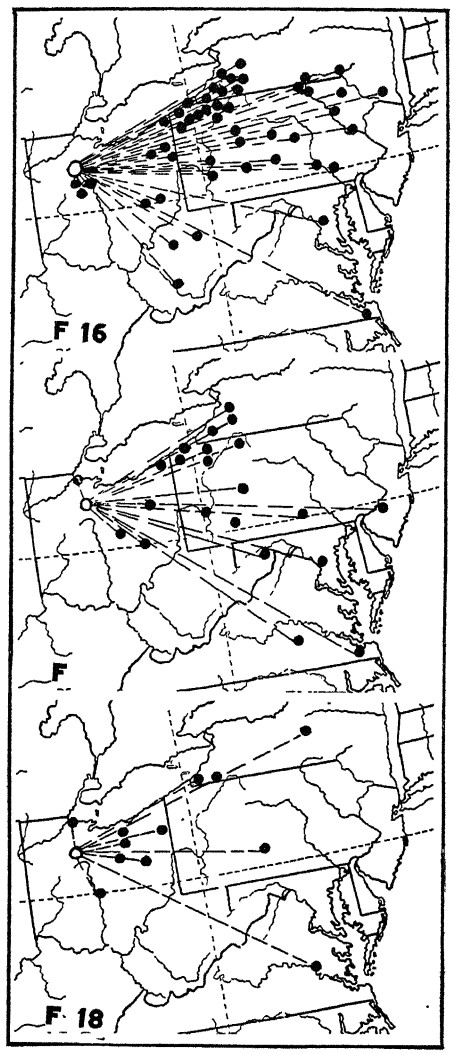
TABLE 22.—Carlot Movement of Grain From an Ohio Farmers' Elevator, Number of Cars and Destination

Grain	Terminal markets	Mills and feeders in Ohio	Other states	Total
Corn	None	15	89	104
Oats	4	7	18	29
Wheat	12	21	5	38

The terminal market received 4 cars of oats; mills or feeders in 5 Ohio cities, 7 cars; eastern and southern states, 18 cars; 9 Pennsylvania cities, 9 cars; 4 cities in New York, 4 cars; and W. Virginia, New Jersey, and Washington D. C., 1 or 2 cars each. That this elevator attempted wider distribution than is commonly practiced by most elevators of the State is seen when it is compared with the movement of grain in the State as compiled by the Federal Trade Commission for the years 1912-13 to 1916-17 (Table 23).

It is evident that the mill and the broker furnished the principal outlet for Ohio wheat. A larger proportion of the corn and oats moved to the terminal market. Many cars of grain purchased by the broker moved to other points within the State.

The places at which wheat was sold varied considerably from those at which corn and oats were sold. Corn and oats for the most part were sold in eastern and southern states. Out of 38 cars of wheat sold 33 went to Ohio points; 12 cars moved to terminal markets, 26 direct to Ohio millers; 3 cars went to 3 cities in New York and 1 car each to Pennsylvania and Virginia.



Figs. 16, 17, and 18.—Direct sales of corn (F. 16), oats (F. 17 middle), and wheat (F. 18) by an Ohio farmers' elevator.

It might be easier for the manager to sell all his grain through terminal marketing agencies. At times these agencies are utilized to a greater extent than others. The lack of "on track" bids by mills or brokers when the market gets into a period of congestion often necessitates the

TABLE 23.—Destination of Ohio Grains and Percentage Distribution*

	Wheat	Corn	Oats
To terminal market	31.0	37.4	36.9
Smaller points	7.9	10.0	12.5
Mills	46.5	15.5	11.9
Feeders	.1	3.4	1.3
Interior brokers	14.4	32.8	35.8

*Federal Trade Commission—Grain Trade, Vol. I. Years 1912-1913 to 1916-1917. Tables 41, 42, 43, 44, and 45.

movement of grain to terminals. A majority of the 265 farmers' elevators shipped more than 60 percent of their grain direct to feeders or mills. A majority utilized the service of the 35 brokers or "track buyers" in finding their market. A small percentage made their own direct contacts with consumers of grain. The terminal market was becoming of less importance than formerly as the outlet for the surplus grain of the local elevator company. The deficit area of grain production was changing each year and the "where to sell" grain of today may be changed a season hence. Changes in agricultural production in Ohio may continue to shift the location of the most profitable market.

WHEN TO SELL

The capacity of the average local elevator puts a very definite limit to the amount of grain that may be stored, and during July and August may make necessary the daily sale and movement of grain. For the grain received during these months the problem of when to sell was limited to a few days. The manager had two choices of time of sale: (1) Selling short (2) Selling after the grain had been purchased from farmers.

The average elevator manager or farmer is naturally a "bull" on the market. It seemed to be the natural tendency to hold purchases for a period of a few days to several weeks or even months, hoping to make a gain from an increase in prices. While speculation by the elevator management is always undesirable it could not always be avoided because grain was received in small quantities the greater part of the year, and sales were made in carload lots and hedges might be had on lots of not less than 1000 bushels. The elevator manager might profitably be short on grain, rather than long. The bear side of the market should not be overlooked. Table 24 shows the result of selling short one day's receipts, one week's receipts, and two week's receipts for a period of one day, one week, and two weeks, respectively, during July, August, and September in 1922, 1923, 1924, and 1925. Some companies made a practice of

TABLE 24.—Gains and Losses Resulting From Selling Short One Day, One Day's Receipts; One Week, One Week's Receipts; and Two Weeks, Two Week's Receipts, During Months of Heavy Receipts of Wheat in 1922, 1923, 1924, and 1925

Year	One day's receipts				One week's receipts				Two weeks' receipts			
	July	August	September	Total	July	August	September	Total	July	August	September	Total
1922	8.5	14.5	—8.0	15.0	5.5	4.0	—4.5	5	5.5	3.0	—4.0	4.5
1923	13.0	—1.5	—4.5	7.0	13.0	—4.0	—3.0	6	11.5	—4.0	—2.5	5.0
1924	—15.5	7.5	—19.5	—27.5	—16.0	7.5	—14.5	—23	—14.0	6.0	—12.5	—20.5
1925	3.5	—8.0	10.0	5.5	3.5	—7.5	11.0	7	—1.0	—4.0	8.0	3.0
Total	9.5	12.5	—22.0	0.0	6.0	0.0	—11.0	—5	2.0	1.0	—11.0	—8.0

*Gain or loss for total number of bushels handled during the month. (Average gain or loss on all wheat handled, in cents per bushel).

selling today what would be received tomorrow. Three years out of four a net gain resulted by selling short one day through July. An average of the four years showed a net gain for the four years for July and August and an equal net loss for September for the same years.

The results were similar when the estimated receipts for a week were sold in advance. The net gain or loss per bushel was smaller but the amount sold short was one week's receipts rather than one day's receipts. The variations in the results between the two methods, as shown by Table 24 are due to the methods of averaging used.

To the manager who is in constant contact with the trend of the cash market during the heavy movement of grain in July and August, daily or weekly short selling may prove profitable. Under stable market conditions, some managers who made a practice of short selling claimed that it is more logical to sell short than to hold grain purchased for price appreciation.

Sale of grain after it was purchased was more commonly practiced than short selling. It was the practice of 101 companies to sell daily purchases before the opening of the market the following day, of 27 to sell within a week after purchase, and of very few to hold grain longer periods.

For the elevators that store grain without selling, the time of purchase and sale is of great importance. The heavy movement of wheat, which is most commonly stored, comes during July and August. Elevators that made a practice of storing wheat had, for the five-year period 1922-23 to 1926-27, an opportunity to make varying rates of profit from the transaction. In the 1922-23 period the low monthly average price was in August, and the high average monthly price in December. In the crop year 1923-24 the low monthly average price occurred in August; the high in February. In the years 1924-25 and 1925-26, the low month was July and the high month January. In the year of 1926-27 the low month was August and the high month May.

In 1922-23 the manager who stored wheat in August could have made gross profits of 20 cents a bushel, if he had sold the stored wheat at any time from December to May. The year 1923-24 was not such a profitable year for managers who stored. The gross profit on wheat sold during February varied from 10 to 13 cents per bushel, or but little more than enough to have paid storage and other charges. The margin on wheat not sold until May was reduced to 8 cents per bushel. Storage paid enormous profits in the

year 1924-25 to those who stored without hedging. A margin of better than $1 per bushel was received by those who stored from July to January, and large margins were obtained by those who stored and sold at any time during that crop year. In the year 1925-26 satisfactory margins were received by those who stored, provided sale was made during December, January, February or March, but if held until April or May a loss might have resulted.

Storage of wheat without immediate resale offers an opportunity for large profits or losses. The practice by elevators of holding grain as speculation is to be discouraged. The average elevator does not have the reserves necessary to take care of losses that are sure to come if the practice is continued. When large profits are made the ordinary custom is to return those profits to the stockholders, which leaves no surplus to take care of the losses when they come.

A second reason against storing without any protection is the difficulty of maintaining a cooperative organization through periods of adversity. A private enterprise owned and managed by a relatively small number of stockholders will stand adversity more easily than will a cooperative organization with many members, who are not informed concerning the business policies of the organization. At least fifteen cooperative elevators ceased operation due to losses accruing from speculative excesses.

During the crop years 1922-23 to 1926-27, on the average, storing was profitable provided the elevator stored grain from the low-price month to the high-price month. In this period August was the month of lowest price three years, while July was the lowest month of the other two years. July and August being the months of heaviest market movement, makes it impractical to utilize the storage facilities of the average elevator until a later period. When this was done and grain was stored from October on, it not only reduced the possible profit to be made during the period, but in the year 1923-24 the price in October was within 2 or 3 cents of the top of the market during the remainder of the crop year. The uncertainty of future prices combined with the difficulty of knowing the right time to store and the right time to sell, makes the practice one which elevators should avoid.

The manufacturer of wheat hedges his purchases and sales to avoid taking chances with price fluctuations. The average farmers' elevator that intends to store grain would do well to hedge all grain stored.

HOW TO SELL

The location of Ohio farmers' elevators influenced the method of sale employed by managers. Proximity to mills and the 36 brokers located in different parts of the State were important factors in determining the method of sale used. The "On track" and "To arrive" bids were most commonly used by elevator managers. Consignment was utilized to some extent and under certain market conditions, but on the whole was of minor importance.

The "On track" and "To arrive" bid was received by managers every business day from mills and brokers.

TOLEDO BID

"BID:—We will give for 2 Red Winter Wheat, Toledo weight and inspection acceptance here by 9:30 A. M. central standard time next business day, straight carload shipments (over 5,000 bu. our option) when loaded on New York Central R. R., Big Four (except at points east of Toledo) also on Michigan Central, Toledo & Ohio Central, Wabash, Clover Leaf, Cincinnati Northern, Grand Rapids & Indiana, Lake Erie & Western, D. T. & I. (last four when shipped via New York Central to Toledo.) Also Ann Arbor. Other grains will be accepted at bid prices from any road when through rates apply via Toledo.

Domestic rate New York	28½	31	31½	34	36	37½	39	40	40½	41	41½
2 red wheat 20 days	134¾	133¼	133	131½	130¼	129¾	128⅞	127¾	127½	127¼	127
2 white oats 10 days	42	41¼	41	40¼	39⅝	39⅛	38⅝	38⅜	38⅛	38	37⅞
3 white oats 10 days	39½	38¾	38½	37¾	37⅛	36⅝	36⅛	37⅝	35⅝	35½	35¾
2 yellow F. S. corn 10 days	63½	62⅜	61⅞	60½	59⅜	58½	57⅝	57⅜	56¾	56½	35¼

TWO RED WHEAT, TRACK TOLEDO, 1.38¼.

No. 1 grades ½¢ premium over No. 2 red wheat.

Two soft white wheat 1¢ premium.

You have the privilege of selling any consigned cars to us while in transit or on spot if you prefer."

The "To arrive" sale gives the manager twenty days in which to load and deliver his wheat, and ten days on oats and corn. At times sales are made "To arrive" having a shorter delivery date. A lack of adequate working capital induced many companies to employ the "On track" or "To arrive" method of sale. Quick returns for grain sold during harvest is needed by the elevator to finance the large daily purchases from farmers.

Few elevators were under financial obligations to grain merchants. This made possible the selection of the method of sale best suited to the needs of the company.

The extent of consignment and "On track" or "To arrive" methods of sale showed some variation when the kind of grain sold was considered, Table 25.

TABLE 25.—Methods of Selling Grain Practiced by Ohio Farmers' Elevators

Amount marketed	Number of elevators that sell "on track" or "to arrive"		
	Wheat	Corn	Oats
All	158	127	127
90 to 99 percent	18	16	22
80 to 90	4	3	2
70 to 80	1	.....	3
60 to 70	1	.....	.....
50 to 60	9	5	11
Under 50	1	.....	.....
Total	192	151	165

Of the 192 elevators that reported on the methods of selling wheat, 158 sold all their wheat "On track" or "To arrive", while 34 sold from 10 to 90 percent of their receipts for the year on this basis. There were 127 companies reported as selling all corn "On track" or "To arrive" and 24 as selling from 50 to 90 percent of their receipts for the year on this basis. Of the 165 companies reporting on the sale of oats, 127 sold all "On track" or "To arrive", while 38 sold from 50 to 90 percent of their total yearly receipts on this basis.

There was little variation in the method of sale employed in different sections of the State. Managers gave two reasons for using consignment as a method of sale—the hope of a rising market and their lack of knowledge of the grade of the grain they had to sell.

STORING GRAIN

The practice of storing grain was followed by a small number of local elevator companies. Of the 101 elevators reporting, only 14 stored grain for their own account. The principal grain stored was wheat. Corn and oats were stored by one or two companies. The amounts stored by the companies that do store varied from 500 to 71,500 bushels. The largest number stored 1100 to 5500 bushels. The practice of storing grain was not localized into distinct sections but is rather a practice that has grown up in different sections of the State, dependent on the willingness of the boards of directors to follow the practices recommended by the manager. A majority of the companies that did store for their own account, did not make a practice of protecting against a decline in the market by hedging.

There was no uniformity in the time that grain was stored. Some managers planned on holding from thirty to sixty days, others from ninety days up to six months. The hope of these companies in their storing policy was for a market increase. The whole procedure is one of pure speculation, and is questionable. Many of the failures of farmers' companies were due directly to either intentional or unintentional speculation.

STORING FOR FARMERS

Of 198 elevators reporting, 103 refused to store grain for farmers. The other 65 stored principally oats and wheat. Wheat was the most important of all grains stored. Some companies limited their storage to wheat alone, others to wheat and oats, and to oats. The practice was most common in a small district in northern and northwestern Ohio. Few companies stored grain for farmers because they desired this type of business, but usually did so to meet the competition of independent or line companies.

The most common method of handling farmers' stored grain was to sell cash grain and buy an equivalent amount in futures. This is the simplest method of handling the problem but often led to losses for the elevator company. Most elevators store but little grain for their own account, either at terminals or in their local elevator. Farmers who store for their own account often stored amounts varying from 200 to 1000 bushels. The best time to sell is decided by the farmer. It often happened that farmers sold amounts that were not sufficient to close the future contract held by the elevator Company.

Another fact which has caused some concern to the local elevator company has been the premium offered by the market for cash grain as compared to future contract prices. Fluctuations in future contract prices often lead to serious loss for companies using this method of handling grain stored for farmers.

The boards of directors of a few companies prohibit the manager from hedging grain stored for farmers and have only allowed the manager to assist farmers in securing terminal market storage when they desire to store. The general lack of information by managers as to the methods and purposes of hedging, combined with the risk that the elevator takes in selling grain stored by farmers as cash grain and buying an equivalent amount as "futures", should lead to the discontinuance of the practice of storing grain for farmers by most companies.

There are several ways in which stored grain may be handled but the more general practices are as follows: (1) Holding the grain in the general stock of the elevator, (2) shipping to the terminal market for storage, (3) selling and immediately shipping cash grain (when the elevator has reached its capacity), and buying an equivalent in futures.

Two companies with ample storage facilities use special bins for storage of farmer owned grains. The reason that more companies do not make this a practice is the lack of storage facilities. Farm facilities for storage are adequate in most localities and roads to the local market are passable every month of the year. The availability to the market and the storage on the farm being adequate has led to a limited demand by farmers for storage facilities.

The reason for running the farmer stored grain into the regular bins of the elevator is economy of space and time. Some companies refuse to accept grain for storage until the heavy shipping season is over. During harvest, when most of the wheat and oats are moving to market, the capacity of the elevator is only sufficient to take care of the grain moving to market. When the heavy movement is over grain is then accepted for storage and run in with the daily receipts.

With the type of records kept by most elevators storing grain for farmers, the total liability of the elevator is not known. A lack of a sufficient number of bins so that the different grades of wheat may be kept separated often leads the manager into difficulty because of his inability to ship the grade sold.

Shipping to the terminal market for storage is practiced by only a few companies. The loss in price on grain stored at terminals has limited the practice of terminal storage by local companies. The expense of storage at terminals and the discounts received on terminal stored grain tends to discourage terminal storage.

Before the elevator attempts to handle farmer stored grain by the method of selling stored grain for cash and buying an equivalent quantity as futures, the board of directors should understand the difficulties that may be encountered. The manager should be thoroughly familiar with all aspects of the hedging process before such a policy is adopted. The lack of information by managers interviewed as to what the hedging process is, what function it may perform, and the how and when to hedge is so general that it might lead to severe losses if generally employed in the handling of farmer stored grain.

KEEPING EVEN WITH THE MARKET

The general practice with most farmers' elevator companies is to make what would be considered a legitimate merchandising profit rather than attempting to make gains through speculation. To keep away from speculation, most companies attempt to keep even with the market or having a continuous balance between grain purchased and sold. Following harvest, grain is delivered by farmers in small quantities. This makes it difficult to keep from some speculation, which results in both profits and losses. The very nature of the grain business as it is now carried on by local elevator companies involves risk. Every transaction whether it consists of buying grain from farmers or a car of fertilizer or feed for resale, has an element of speculation. Those elevators that had heavy stocks of feed during the deflation following the war may believe that there is more speculation in buying feeds than in buying grain. An unsold car of feed in the warehouse of the elevator may result in a large profit or loss.

Every farmers' elevator company included in this survey carried one or more types of insurance and was convinced that it is sound business policy to do so. The company, however, expected to have complete coverage which would relieve the elevator of all loss in case of heavy damage. In the feed and general merchandise business as carried on by the local elevators, losses are difficult to control. Careful buying, which will be discussed later, is the most common way of preventing losses.

In the grain side of the business, two methods of keeping even with the market are commonly employed. (1) hedging, (2) "track bids". The second method is more common than the former.

HEDGING

To have hedging there must be a futures trading market where contracts for the future delivery of grain may be bought and sold. A hedge is the purchase of a future against stored grain sold or the sale of a future against the purchase and storage of unsold grain. The purpose of making the purchase or sale of a future is to avoid losses from price fluctuations. It is an attempt to keep even on the market at all times.

The occasion for hedging by Ohio farmers' elevators arises as a result of the practice of storing grain for farmers rather than the storing of grain for the account of the elevator. The lack of adequate capacity for storage of all the grain offered necessitates either

the selling of cash grain and the purchase of futures or the storage of the surplus at terminal market points. The most common practice is to sell cash grain and purchase an equivalent in futures, which in the following hedge taken from a local elevator resulted in several transactions:

SALES

Aug. 25, 1924—(1)	1000 bushels No. 2 Red Winter	@	$1.25
May 1, 1925—(3)	1000 bushels No. 2 Red Winter	@	1.55
June 19, 1925—(5)	1000 bushels No. 2 Red Soft	@	1.54⅝
Total			4.34⅝

PURCHASES

Aug. 25, 1924—(2)	1000 bushels No. 2 Red, May Future	@	$1.33¾
May 1, 1925—(4)	1000 bushels No. 2 Red, July Future	@	1.43¾
June 19, 1925—(6)	1000 bushels No. 2 Red, Paid Farmers	@	1.66
Total			4.43½

As noted above farmers stored 1000 bushels of grain in the local elevator which the manager sold for cash at $1.25 per bushel and purchased a May future at $1.33¾. On May 1, 1925 the manager decided to shift his hedge from a May delivery to a July delivery, selling 1000 bushels at $1.55 and buying a July future at $1.43¾. On June 19, the farmers sold 1000 bushels which they had held in storage at the cash price of $1.66, being paid that day. The manager on the same date sold the July future he had purchased at $1.43¾ for $1.54⅝.

The elevator in this case had stored the grain for the farmer for ten months. The first month's storage was free and the charge for the rest of period was at the rate of 1 cent per bushel per month which netted the elevator $90 for storage. How did the elevator fare in this case? Will hedging always assure the elevator against loss? In the transaction of August 25 there was a premium of 8¾ cents on the future contract as compared to the cash price. On May 1 when the manager shifted his hedge from May delivery there was a premium of 12¾ cents for May delivery as compared to July. On June 19 when the farmers decided to sell there was a cash price paid by the elevator of $1.66 while the July future was then selling at $1.54⅝ or a premium of 11⅜ cents per bushel for cash grain, immediate delivery, as compared to the July delivery. The total sales of the elevator was $4.34⅝ per bushel, while the purchases were $4.43½ or a loss of $ .087⅛ per bushel totaling $88.75 on the 1000 bushels. The storage received by the elevator amounted to $90 which left the elevator $1.25 for its services in the transaction.

The problem of storing grain for farmers and selling cash grain and buying futures is difficult for the manager when the price of cash grain, when sold by the farmer, is above futures. The time to shift from one contract period to the other is not always easy of determination. The most serious aspect of the situation is not apparent in the above illustration. When are farmers going to sell and will they sell sufficient quantities to enable the manager to clear his commitment on the market? A delivery of small quantities often leads to losses when cash grain is at a premium over the future contract price.

If the elevator had not purchased futures against the grain stored for farmers and sold for cash the elevator would have lost the difference between the price at which they finally purchased the grain, $1.66 per bushel, and $1.25, the cash price at the time the elevator sold or $410 on the transaction.

The variation in the relation of cash and future prices makes for uncertainty in the financial outcome of transactions when the elevator is storing grain for farmers and selling this grain and purchasing a future. Cash price and future price do not always change at the same rate or in the same direction, which results in unavoidable gains and losses. The problem is further complicated by the small sales (under 1000 bushels) made by farmers at different periods.

The relation of cash and future prices of wheat for the crop years 1922-23 to 1926-27 are shown in Figures 19 to 24. These figures show the spread between Toledo cash bids for No. 2 Red Winter wheat and the corresponding Chicago futures for Wednesday of each week for the crop years 1922-23 to 1926-27. The average spread of these five years, using the same data, is shown in Figure 24. Wednesday's prices were taken for convenience rather than the average of the week. The closing price of both cash and future prices was used.

There was considerable variation in the relation existing between cash and future prices during different periods of the year, and also between the various futures which the manager could use as the basis of his hedging operation. The actual price of grain is not as important as the relation that exists between the cash and futures price.

The future that is to be used in hedging cash sales of stored grain is of considerable importance. The September future, because of its closeness to the storing period, was seldom used by elevators as the basis of hedging. December and May were most

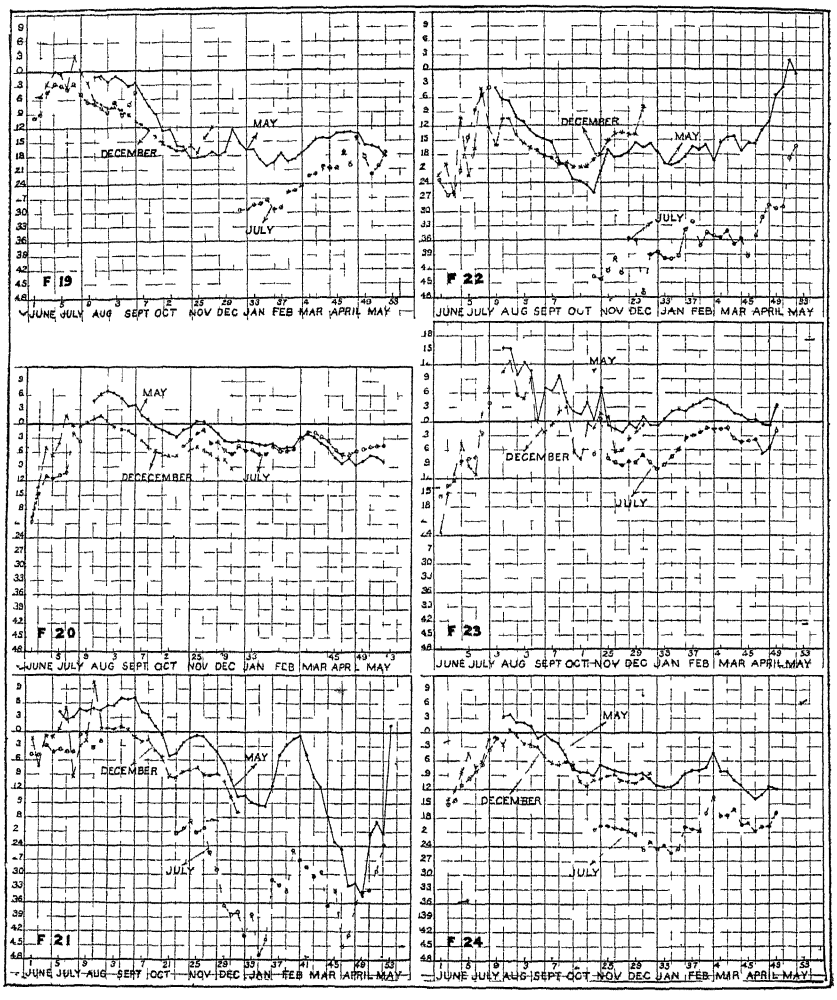
commonly used. For grain stored in the latter part of August, September, and October the December future offered the least protection against loss during the crop year 1922-23. From the second week in August to the third week in October the widest spread between the May and December future was 5¾ cents. During this period the May future was 1 cent below and the December future 6¾ cents below the cash price. The smallest variation between the May and December futures occurred during November when the two were equal, and for the remainder of its life the December future was closer to the cash price than to the May future price. The Manager who sold cash grain during this crop year could have purchased the December with an opportunity of switching from December to May without loss in the transaction. Farmers who stored grain until spring made necessary the shifting by the elevator of its December commitments to May.

There is no assurance that the purchase of a December future as the basis of a hedge against the sale of grain stored for farmers can always be switched to a May future without loss to the elevator. During the crop year 1923-24 (Fig. 20) no opportunity was offered during the life of the December future, to switch from December to May without incurring some loss in the transaction. During the five-year period under consideration the December future on an average was the most advantageous to purchase. There were several periods before the close of the December future in which the manager who purchased a December future in July, August, or September could have switched the December commitment to May without loss or with a profit in the transaction of 1 cent to 2 cents per bushel (Fig. 24).

The financial outcome of the policy in which the elevator stores grain for farmers, sells it for cash, and hedges the sale by the purchase of a future, is of importance to the elevator. During the months of July and August the May future on an average for the years 1922-23 to 1926-27, was above the cash price by 2 to 3 cents. From November to the closing out of the May future, the cash price of No. 2 Red Winter wheat was at a premium varying from 4½ to 13⅞ cents per bushel. These situations may have led to a loss by the elevator varying from 6½ to 16⅞ cents per bushel, as the elevators had no choice as to when the farmers should sell or in what amounts, were liable to take losses on the transactions.

This condition held true whether the futures were above or below the cash price. In the year 1922-23 the May and December futures were below cash after the third week in August (Fig. 19);

in 1926-27 they were above cash for varying periods (Fig. 23), the May being above for a majority of the crop year. In either year the elevator might have lost as much as 19 cents per bushel on the transaction. A loss of 40¾ cents per bushel in the transaction might have occurred in 1924-25 (Fig. 21). The year 1925-26 might have shown a profit on the transaction of 6 cents per bushel (Fig. 22).



Figs. 19—24.—Deviation of Chicago, May, July, and December future prices of No. 2 Red Winter wheat from Toledo cash prices at Toledo

F. 19, 1922-23; F. 20, 1923-24; F. 21, 1924-25; F. 22, 1925-26; F. 23, 1926-27; F. 24, average deviation 1922-1926

Figures at right in each graph indicate cents above and below Toledo cash price

The uncertainty of the relation between the cash and future prices made the practice of storing grain for farmers, with its subsequent sale for cash and hedged by the purchase of a future, a highly speculative venture. The advantages accruing to the elevator, which were chiefly the storage charge of 1 cent per bushel per month and the use of the money received from the sale of cash grain, should be compared with the risk involved. The hedging transaction, where the elevator buys grain at the time of delivery and sells a future at the time of the purchase, was a more certain transaction as far as handling charges and profits are concerned. The transactions would be as follows:

PURCHASES

Aug. 25—(1)	1000 bushels No. 2 Red	@	$1.20
May 1—(3)	1000 bushels No. 2 Red May Future	@	1.55

SALES

Aug. 25—(2)	1000 bushels No. 2 Red May Future	@	$1.33¾
May 1—(4)	1000 bushels No. 2 Red	@	1.55

In this hedge the elevator purchased the grain at $1.20 per bushel and on the same day sold 1000 bushels for May delivery at $1.33¾, a margin of 13¾ cents per bushel to pay storage, shrinkage, and handling charges. On May 1 the elevator purchased 1000 bushels May future for $1.55 and sold 1000 bushels for cash at $1.55.

For elevators that store grain for their own account or sell grain for deferred shipment, hedging is necessary as an insurance against excessive loss and it prevents excessive profits. If the local elevators of Ohio are to remain as cash grain merchants running their business with as little speculation as possible, more complete information concerning the hedging process is necessary. If the policy of the local elevator is to make profits through speculation there is little reason for bothering with the troubles connected with local elevator management.

FACTORS AFFECTING THE EXTENT OF AND OCCASION FOR HEDGING

In the State 6 farmers' elevator companies made hedging a part of their regular business practice, 27 hedged at times, and 150 never hedged. Of those hedging, 24 hedged some wheat, 5 corn, and 9 oats.

1. **Stability of the market.**—The extent of hedging was influenced more by the condition of the market than by any other factor. Some elevators refused to hedge when the market was stable and

had a steady upward movement. During harvest, if the market were declining from day to day, many managers hedged the anticipated receipts for the day. The lack of "on track" bids from mills or brokers, which occasionally happened was the cause of hedging in some instances.

2. **Transportation facilities.**—A car shortage, which made it impossible to move the day-to-day receipts or make "to arrive" sales with an assurance that delivery could be made, was given by some managers as the reason for hedging.

3. **Contracting.**—In sections where contracting with farmers for future delivery was practiced, elevators hedged as a safeguard against loss.

4. **Stored grain.**—A majority of the 14 elevators that stored grain for their own account, did so for the rise in the market and not for hedging. The few that stored for their own account with hedges found the practice a safeguard against loss and a source of revenue. There were 65 elevator companies that stored grain for farmers, and in all cases those that sold cash grain bought an equivalent quantity of futures. Farmers seldom sold futures against grain stored at the local or terminal elevator.

5. **Objection by directors.**—Many companies failed to hedge because of the objection raised by boards of directors. The directors as a rule believed that hedging is speculation. Some of these companies made a practice of storing grain for the elevator's account as long as 60 days. with the hope that the market would rise.

6. **Selling methods.**—The "on track" or "to arrive" bids, which came into the elevator every morning and could be accepted before the opening of the next day's market, was the predominant method of selling grain. The fact that this method superceded all others limited the necessity of utilizing hedging for the larger part of the year. During the heavy marketing period, it enabled the manager to keep even with the market utilizing the hedging operation.

7. **Volume of grain handled.**—The amount of grain of the various kinds received for shipment influenced the amount of hedging done by the average farmers' elevator. Reports from 153 companies showed 43 elevators handling wheat only. These companies, on the average, handled 29,337 bushels of wheat during the year. One elevator shipped oats only, 41,800 bushels. Wheat and oats were shipped by 29 companies with an average of 23,100 bushels of

wheat and 23,617 bushels of oats. Two shipped wheat and corn, their average being 52,800 bushels of wheat and 19,800 bushels of corn. Three shipped only corn and oats, having 20,533 bushels of corn and 29,133 bushels of oats.

Since the farmers delivered grain in small quantities which the elevator must buy for cash, the problem of maintaining a sufficient margin on all grain to assure a profit was next to impossible.

The sale of small quantities, stored by farmers at irregular intervals making it impossible for the manager to get 1000 bushels that he could keep on the market, was often a cause of losses by the elevator. The minimum quantity of futures that could be traded was 1000 bushels.

8. **Adequacy of records.**—The seven companies that made hedging a part of their regular business practice kept a close check on their hedging account. Daily "long" and "short" reports were kept and the managers knew at all times their position on the market. The records of the 26 companies that hedged at times were inadequate. Some were not sure in what month they had hedged stored grain, while others were not sure whether they had sold more for future delivery than was stored in the elevator. The lack of information concerning their position on the market often led to losses or gains. The management of these companies either lacked a proper understanding of future trading or failed to adjust their accounting methods to give the information they needed. Before managers generally use future trading as an insurance against loss, more complete accounting records are necessary. There is also need for a better understanding of the function of future trading and when and how it may be profitably used. Adequate records of hedging will permit immediate comparison of losses or gains on hedges with those on cash grain.

GRAIN BUYING POLICIES

CASH PURCHASES

Grain was bought exclusively for cash by 199 of the 216 elevators reporting. A large proportion of the grain was purchased at the time of delivery. Some companies required that grain stored in the elevator should be sold to the elevator, the date of sale to be determined by the farmer and the price paid to be that prevailing on the date of sale.

CONTRACTING

The development of the practice of contracting grain for future delivery by local farmers' elevators was due to several causes. Farmers desirous of knowing in advance the price they are to receive requested the local elevator to agree upon a price before delivery. The request to contract was most common before harvest. Competition by mills or independent elevators that, in many cases, were contracting, forced some elevators to contract in advance, in order to secure an adequate volume of grain. Several companies who were intelligently contracting benefitted from the practice. In 1924, 17 farmers' elevators were contracting 5 to 75 percent of their total grain purchases in advance of delivery. The price to be paid in most cases was agreed upon when the contract was made. The length of the contract period extended from a few days to several months, the most common period being 30 days.

The practice of contracting led to at least three difficulties:

1. Failure on the part of the manager to protect his contracted grain by hedging his purchase.

2. Dissatisfaction with the terms of the contract by the farmer when the market was higher at the time of delivery than that called for by the contract.

3. Failure to specify the number of bushels contracted in some cases when the market was lower at the time of delivery led to attempts to deliver more grain than was agreed upon.

MARGINS FOR HANDLING GRAIN

Many elevators made no distinction between the merchandise and grain business in their accounting practices. In more than one-half of the companies the merchandise represented more than one-half of the total income. In determining the margins for handling grain, the cash bid received by the elevator manager was used as a base. Margins as used in this study represent the difference between the cash bid received by the elevator and the price paid to farmers.

The amount of margin taken by elevators varied for different reasons (Table 26): (1) Proximity to large mills limited very definitely the amount of margin the elevator was able to take; (2) Margins at a given elevator varied greatly at different times in the year. Most elevators worked on a narrower margin during the heavy movement of grain than during the rest of the year. During the heavy movement margins varied from 1 to 3 cents per bushel under the price for the rest of the year. The explanation given by

managers for the variation is the added risk of price change when only small quantities of grain are received. (3) Variations in the quality of grain influenced the amount of margin taken. Low grade grain required a wider margin than high grade grain. In some communities two varieties of grain such as red and white oats were grown and became mixed. This required a wider margin, due to increased cost of handling or lower price. In some sections the problem of keeping spring and winter wheat separated necessitated increasing margins. (4) Variations in the practice of determining grade by "test weight" or moisture tester caused differences in the margins taken. Managers who used "test weight" and moisture testers had fewer losses and, as a rule, bought on narrower margins than those who estimated the grade.

Corn, oats, and wheat were the principal grains handled by most Ohio elevators. In a few localities, barley, buckwheat, and cloverseed were of minor importance.

TABLE 26.—Margins Taken on Grain by Ohio Farmers' Elevators

Margin in cents per bushel	Number of elevators receiving margins on		
	Corn	Oats	Wheat
0— 2	1	0	0
2— 4	32	68	11
4— 6	51	63	58
6— 8	21	10	69
8—10	14	4	41
10 and over	10	6	17

The margins taken on wheat by elevators varied rather widely (Table 26). Many companies, located near large mills or situated near a terminal market, found it necessary to handle wheat on a narrow margin throughout the year. Margins varied from 3 to 11 cents per bushel, most often from 5 to 8 cents per bushel.

Corn was handled on margins varying from 3 to 12 cents per bushel, most commonly 4 to 6 cents per bushel.

Oats were handled on the narrowest margin, which varied from 2 to 10 cents per bushel, 3 to 5 cents per bushel being the most common.

Only 50 elevators out of 186 reporting figured out the margin necessary to assure handling charges and a profit, before they announced their buying price. Of these 38 would buy grain providing the margin they were able to take in meeting the price of competition, was wide enough to pay for actual handling without assuring the elevator a profit. Even though it might result in a loss, 98 companies bought grain on the margin allowed by competition.

FINANCIAL POLICIES

CAPITALIZATION

The financial needs of Ohio farmers' elevators received little attention at the time of organization. All elevators in Ohio were organized on the stock corporation plan. From the very outset the need for finances to pay for the building and equipment made the non-stock plan of operation impractical. The sale of capital stock was the original source of financing the operation of the elevator. The amount of capital stock subscribed and paid for in the elevators in which the grain business predominated varied from $16,000 to $30,000, the average being $23,600; while the amount raised in elevators in which merchandise predominated varied from $13,800 to $36,100, with an average of $25,000. Whether or not the amount of capital actually paid in by the stockholders would be adequate to pay for the land, buildings, and equipment and allow for an adequate operating capital was given little consideration.

CAPITAL REQUIREMENTS

Fixed assets.—There was considerable variation in the value of the land, buildings, and equipment of the 80 elevators in which the grain business predominated. Those with sales up to $74,999 had an average value of $14,095, while those with sales of over $225,000 had an average of $30,860, the weighted average value of the entire grain group being $22,783.

In the merchandise group there was a still wider variation in the value of fixed assets. Those with sales up to $75,000 had an average of $13,136, while those with sales over $225,000 had an average of $33,551, the average of the entire group being $23,780, or less than 1000 more than the grain group.

With the trend of farm production away from the grain business, a larger proportion of the capital was required for the purchase of fixed assets. Most of the additional demands were for increased storage space for feeds and fertilizers. Coal sheds and corn cribs are now a part of the equipment of the average elevator company.

The variation in the demand for capital within the merchandise and grain groups of the same average volume of business was due to several causes.

The number and kinds of scales in use at the elevator varied. All companies had dump scales to weigh in grain as it was received from the farmer; a few had automatic scales for weighing out grain at the time of loading; and others had large hopper scales.

The kind of power used by the elevator was a second cause for variation in the demand for capital. Four kinds of power were utilized—steam, electricity, gasoline engine, and natural gas. Some companies had equipment for more than one type of power. Steam plants were being replaced, to some extent, by gasoline engines and electricity. Natural gas, where available, was utilized as the principal source of power, but in many cases it was supplemented by gasoline engines or electricity. In several cases, steam plants became obsolete and were replaced in most cases by electricity.

The number and kinds of feed grinders had an important influence on the demand for capital. Costs of grinding machinery varied from $300 to $2000, most common being $1200.

One or more feed grinders were used in 170 elevators out of 193 reporting. Many companies had purchased grinders that within a year or two were too small for the increased amount of grinding, coming to all elevators.

All but 3 of the 183 elevators reporting had one or more cleaners with an average capacity of 300 bushels per hour. The cost of cleaners depended upon the size and kind and varied from $100 to $900, the larger number costing $300 to $400.

Fifteen companies had grain dryers, the cost varying according to kind and size, the most common cost being $3500. The dryer is a valuable asset to the elevator with a sufficient volume of grain. This is especially true where corn of considerable volume moves to market.

The office equipment costs varied widely. Some offices were well provided with adding and tabulating machines, grading equipment, safe depositories, and other modern equipment, while many others were less expensively equipped.

Operating capital.—Operating capital consisted of cash on hand and the bank balance, notes receivable, accounts receivable, grain inventory, merchandise inventory, deposits, and prepaid accounts. The average operating capital requirement of the 165 grain and merchandise elevators as of Jan. 1, 1925 was $23,418, or 50 percent of the total capital requirement (Table 27).

The date of taking the audit may have determined the amount of operating capital of companies in which the grain business predominated. With all but three companies, merchandise or sidelines comprised an important item in the total business. The audits from which the data were secured were taken anywhere between December 1 and May 30. In most cases stocks of grain were comparatively small because few companies made a practice of storing grain.

On the other hand the demand for merchandise was relatively constant from September to June. Fertilizer demand came in the fall and spring, feeds and coal during the fall and winter.

TABLE 27.—Average Capital Requirement of 165 Farmers' Elevators Jan. 1, 1925

Currant assets		
Cash and bank	$2,798	
Notes receivable	917	
Accounts receivable	7,003	
Grain inventory	4,493	
Merchandise inventory	7,223	
Deposits and prepaid	984	
	.....	$23,418
Fixed assets		
Land	.....	
Buildings	.....	
Machinery and equipment	.....	
Furniture and fixtures	23,252	23,252
	Total assets.....	$46,670

The chief demands for operation capital (64 percent) were for the purchase of merchandise and for accounts receivable from merchandise sales. The fact that merchandise constituted such an important part of the business of the average elevator, combined with the methods of sale commonly practiced (see selling practices) tended to make a uniform demand for operating capital throughout the year.

In elevators that made a practice of storing grain for farmers, there was demand for advances on the grain stored but most of these companies sold the farmer stored grain and purchased futures. This practice furnished an added amount to the operating capital of the elevator.

METHODS EMPLOYED TO SECURE OPERATING CAPITAL

As previously mentioned, the capital raised through the sale of stock at the time of incorporation was, on the average, just adequate to pay for land, buildings, and equipment. All companies found it necessary to raise some part of the additional capital through the sale of capital stock.

Two sources of borrowing were employed by Ohio elevators to secure the additional needed operating capital. These were banks and individuals (Table 28). The local bank was the principal source of borrowed money. The most common rate of interest charged by banks and individuals was 6 percent. The relative abundance of local funds made it unnecessary to go beyond the local territory for additional funds. In most communities there was a close working

relationship between the local bank and the elevator. The availability of ample funds locally to meet the financial requirements of the elevator was a decided advantage to the elevator company as it permitted freedom of sale to the best possible markets available.

TABLE 28.—Source of Borrowed Money in Ohio Farmers' Elevators

Rate of interest	Elevators borrowing from	
	Local banks	Individuals
Percent	*No.*	*No.*
6	58	11
6.5	1	.....
7	28	5
7.5	.....	1
10	1	.....

Since approximately 90 percent of the elevators used the "on track" and "to arrve" method of sales exclusively and the remaining companies used these methods for a considerable portion of their grain sales, it was unnecessary for the elevators to secure large amounts of operating capital for the movement of grain to market and it was possible to finance the companies through local agencies.

The demand for operating capital came principally from the merchandise rather than the grain side of the business. The amount of operating capital needed varied considerably among elevators, depending on the number of sidelines carried and the amount of each kind necessary to keep in stock. The importance of merchandise in the elevator will be discussed more fully later.

GRAIN STORED FOR FARMERS, A SOURCE OF OPERATING CAPITAL

Storing grain for farmers was a practice with 65 companies. It was common for these companies to sell the grain stored by the farmer for cash, and to purchase an equivalent of the amount sold, in futures. The principal advantage of this transaction to the elevator is the releasing of additional storage space and making available operating capital for the purchase of merchandise. The uncertainty of the time when the farmer will sell his stored grain tends to discount the apparent advantage gained through the use of this added capital.

LOANS FROM FARMERS

Loans from farmers were also a source of working capital. These loans were of two kinds—(1) loans to be paid back in cash at the end of a stated period, (2) loans to be paid back in merchandise or service over a period of years. Loans to be paid back in cash were the most common.

The loans made to run over a period of years and to be paid back in merchandise with a definite limit on the amount of merchandise that could be purchased, operated successfully where tried. The following sample note of an elevator runs over a period of eight years and is payable at the rate of $3.75 quarterly in merchandise. The limitation of the amount of merchandise that may be purchased in one year allows the company the use of the balance. In one company feed grinding was also applied by the elevator in the payment of the note. In some companies a few farmers ground out their total loan in less than two years.

....., Ohio, May 21, 1925

This Certifies that The ....., of ....., Ohio, is indebted to M. R. Marey or order in the sum of One hundred Dollars ($100.00), for value received, payable in trade at said Company's plant at the rate of Three and 75 Dollars ($3.75) quarterly, said ($3.75) payable every three months from this date until 32 such payments have been made or in cash at such three-month intervals at the option of the said Company.

....., President.

....., Sec'y-Treas.

From the standpoint of the elevator, at least two things were accomplished: the elevator secured working capital for operation at a moderate rate of interest, to be paid back on the amortization plan, and it secured the patronage of those who had loaned money to the company over a period of years. In companies where other means of providing operating capital are difficult, this plan may be utilized to good advantage.

PLAN OF OPERATION ASSISTS IN FURNISHING OPERATING CAPITAL

The farmers' elevator movement from its very beginning has been based on the payment of cash for grain at the time of delivery. It has always been a custom in a large majority of the companies to allow credit on merchandise purchased. The practices adopted due to necessity of meeting competition, were being changed by many companies whose members were convinced that the elevator company is a servant of the community. In 1924 it was possible in many cases to take a wider margin on grain and merchandise, especially where competition was less keen, and pay the profits of the year's business back to the farmer in the form of stock and

patronage dividends. This custom of deferring payment of the total receipts to the end of the year could serve as one of the principal sources of operating capital. When farmers become willing to patronize their own company regardless of the price offered by competitors and to defer final settlement to the end of the year, then the problem of securing an adequate operating capital will be easily solved.

RESPONSIBILITY OF PROVIDING ADEQUATE CAPITAL

An adequate amount of operating capital is essential to the successful running of every elevator. There was some difference of opinion as to what constituted an adequate amount and who should be responsible for securing this amount.

The financial policy of a company should be such that money can be borrowed at a moderate rate of interest. It should permit the manager to use his judgment in the selection of the best available market for grain. It should allow the manager to buy the necessary merchandise requirements of the company at advantageous buying seasons and permit him to take cash discounts on all purchases.

During periods of prosperity the elevator companies, as a whole, could be criticised for not providing substantial surpluses to take care of their financial needs during periods of depression. Many elevators could and should build up their surplus account to equal the paid up capital stock.

TABLE 29.—Security Given by Ohio Farmers' Elevators for Operating Capital

Kind of security	Number of elevators
Company note	24
Director's personal liability	46
Joint note of stockholders	12
Manager's signature	3
Mortgage on property	10
Total	95

Too many directors, through the necessity of keeping the elevator in operation, found it necessary to sign personal notes to obtain funds for the company. The kinds of security given by 95 elevators indicate clearly the financial weakness of these companies (Table 29). In only 27 of the 95 would the company note or the manager's signature secure the needed funds. In 12 companies the joint note of the stockholders secured the needed capital where the company is unable to secure funds in any other way, a joint note of

the stockholders is to be recommended in place of the personal signatures of directors. Ten companies found it necessary to mortgage their property to secure adequate funds.

The necessity for all companies' taking steps to provide a surplus account was emphasized by the condition of the grain and merchandise elevators as of Jan. 1, 1925 (Table 17). The volume of business, as pointed out on page 28, is an important item in the efficiency of any company. Most of the smaller companies, those with total sales below $150,000, had a deficit as the result of operation. Individual companies could be singled out that had a surplus. As mentioned 106 of the 265 companies were organized during the years of 1919 and 1920, or just previous to the deflation, which caused financial difficulties for all companies. Many of these companies had little opportunity to accumulate large surpluses while others that made substantial earnings were anxious to make a showing of what the elevator meant to the farmers by paying out all earnings in dividends.

Companies that survived should have a financial program that will be able to stand a similar depression, if it occur.

GRAIN HANDLING PRACTICES

The amount and kind of grain influences handling practices.

In determining business practices for elevators it is necessary to take into consideration the importance of various grains and the relative amount of each kind of grain handled.

TABLE 30.—Kinds of Grains Handled by Ohio Farmers' Elevators

Grains shipped	Number of elevators	Average number of bushels per elevator			
		Total	Wheat	Corn	Oats
Wheat only	43	29,337	29,337	.....	.....
Corn only	0	.....	.....	.....	.....
Oats only	1	41,800	.....	.....	41,800
Wheat and oats	29	46,717	23,100	.....	23,617
Wheat and corn	2	72,600	52,800	19,800	.....
Corn and oats	3	49,666	.....	20,533	29,133
Wheat, corn and oats	75	87,308	34,577	28,809	50,502
Total	153	75,122	30,261	14,784	30,077

Table 30 shows the kind of grain shipped, the number of elevators shipping each kind, and the average number of bushels. Data were secured from 153 elevators, of which 75 shipped corn, wheat, and oats. This represents about one-half of the elevators reporting and in general includes a majority of those in our previous classification in the grain predominating group. The table

also shows that 43 elevators shipped wheat only, 29 both wheat and oats, 2 wheat and corn, and 3 corn and oats. The total weighted average number of bushels of each of the grains shows wheat as the most important and the most common grain handled by farmers' elevators (Fig. 25). The surplus corn and oats area was principally in the western and northwestern part of the State (Fig. 26), surplus quantities of oats being found in a few more counties than corn (Fig. 27).

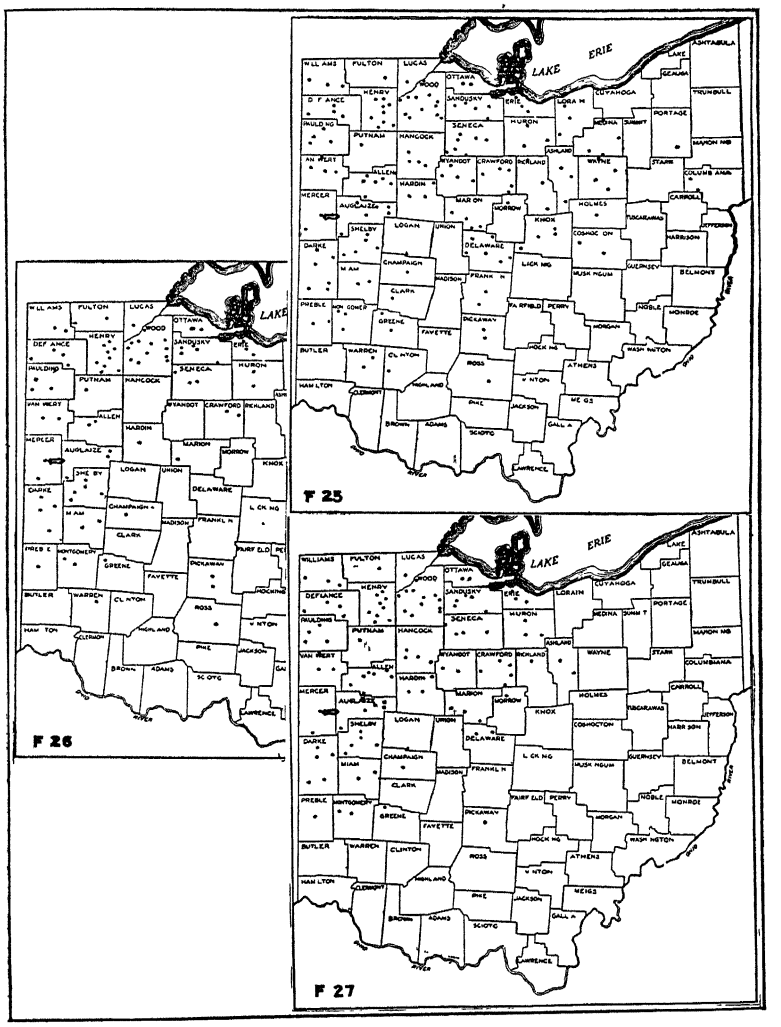


Fig. 25.—Farmers' elevators that ship wheat
Fig. 26.—Farmers' elevators that ship corn
Fig. 27.—Farmers' elevators that ship oats

The problems of grading, docking, and weighing did not always have the same significance, from the standpoint of profit or loss, with all elevators. Elevators that retailed practically all the grain purchased from farmers were differently affected by the handling practices than those which had large surpluses of corn, wheat, and oats to market. It is apparent that the elevator that had no surplus grain to sell to outside markets was in a position to determine, not only the grade upon which grain was purchased, but also the grade upon which it was resold.

Practically all surplus wheat was sold to outside markets by both grain and merchandise elevators. The amount of corn sold locally varied greatly. In the elevators in which grain predominates, 22 sold all their corn locally; 20, none; and 38, small amounts. In the merchandise elevators 52 sold all their corn locally; 1, none; and 11 a small amount, principally for seed.

In the grain group 10 elevators sold all of the oats purchased to the local market; 28, none; and 30, small amounts, principally for seed. In the merchandise group, 38 sold all their oats locally; 1 sold none locally, and 22, small amounts.

GRAIN GRADING PRACTICES

Lack of adequate records in most elevators made it difficult to determine whether the grade of grain purchased corresponded to the grade sold. The ordinary grading practices of the average elevator were such that there was a possibility of considerable loss or profit from misgrading. The manager determined the grade used as the basis of the purchase price to the farmer, but the rules and regulations of the Federal Grain Standards Act determined the grade upon which he must sell his surplus.

The methods employed by Ohio farmers' elevators in making grade determination are subject to criticism. The equipment for making proper grade determination was lacking in more than half of the elevators. Less than half the companies that had the proper equipment made use of it. But a small portion of the managers who made use of their grading equipment, were certain of the accuracy of the methods they were using.

The methods of grade determination of the different grains varied considerably. In making the grade determination of wheat 113 managers used test weight per bushel as the basis, while 13 merely estimated the weight. For oats 33 managers used the test weight per bushel and 59 estimated the weight as a basis of grade

determination. Only 14 managers used the moisture test as a basis of grade determination for corn, while 57 admitted that they estimated what the grade would be.

Greater care in grain grading is needed in most elevators of the State. This is especially true during the early part of the movement of a new crop or until the general grade of the crop is known. With the cooperation offered by the Federal Grain Supervision Offices and the facilities of the inspection departments of the boards of trade, there is little reason why managers should not be better informed on the grades of the various grains purchased.

Some sections of Ohio produce No. 1 and premium wheat. In most cases the prices paid to farmers were on the basis of No. 2. The amount of income derived from premium wheat was difficult to determine because of the general inadequacy of the grain records. Elevators desirous of improving the quality of wheat grown in their community can best accomplish this by adopting better grading methods and paying for wheat on the graded basis. Difficulties arising from two or more prices caused many elevators to maintain uniform prices. The manager of a farmers' company is the servant of all the stockholders. When the grain from one farm brings more per bushel than from another in many cases trouble is brewing for the manager. This situation needs the attention of farmers and managers and a program for better grading methods should be worked out and adopted. Better grading by elevators would bring to the attention of farmers the need of better production methods. The need of attention to this problem was clearly indicated by the amount of grain of the various grades received at the Toledo, Cleveland, Fostoria, and Bryan markets, which have inspection.

Tables 31, 32, and 33 show the number of cars by grade of wheat, corn, and oats, inspected during the crop year 1924-25, on these four markets. The data do not include all grain moving out of Ohio nor was all of the grain inspected on these markets of Ohio origin. Michigan and Indiana contributed some of the cars included in the inspections. The data on the whole fairly represent grades of Ohio grain or grain grown under similar growing and marketing conditions.

There was considerable variation in the number of cars of No. 1 and No. 2 wheat in relation to the total number of cars inspected (Fig. 28). In July 86 percent of the receipts were graded No. 2 or better while in October 40 percent of the total receipts was of this grade. During the months of harvest receipts (August and September) the percentage of wheat that was of No. 2 grade or better

ranged from 41 to 50 percent. It should also be noted that a larger percentage of the total receipts that had to be sold as sample grade came into the markets during August, September, and October.

TABLE 31.—Receipts of Wheat by Grades at Four Terminal Markets* by Months, July, 1924 to June, 1925 (Carloads)

Month	1	2	3	4	5	Sample	Total
1924							
July	234	199	46	11	3	7	500
August	1037	959	365	289	7	42	2699
September	233	290	181	277	19	43	1043
October	147	223	141	317	18	45	891
November	117	170	62	177	9	27	562
December	61	107	38	55	10	7	278
1925							
January	103	131	25	37	5	12	313
February	161	177	55	98	12	11	514
March	26	56	5	10	5	3	105
April	27	57	4	13	4	2	107
May	61	75	15	16	9	6	182
June	68	74	13	14	8	4	181
Total	2275	2518	950	1314	109	209	7375

*Toledo, Cleveland, Fostoria, and Bryan.

When the total number of cars of the different grades are considered, 34.1 percent graded No. 2, the basis upon which most elevators determined their buying price; 30.8 percent was No. 1, or wheat that in most cases would sell at premium above the buying price; while 35.1 percent was No. 3 to sample grade. The problem of the manager was to balance premiums and discounts if he was to make a margin of profit on wheat. When the analysis of costs of operation was made, several companies showed losses that could be traced to their grain buying policy.

TABLE 32.—Receipts of Corn by Grades at Four Terminal Markets* by Months, July, 1924 to June, 1925 (Carloads)

Month	1	2	3	4	5	6	Sample	Total
1924								
July	23	100	75	15	11	17	29	270
August	12	79	59	20	9	6	3	188
September	16	86	94	9	8	6	6	225
October	12	131	173	65	13	23	5	422
November	22	107	91	50	21	6	40	337
December	9	77	125	156	195	39	65	666
1925								
January	2	26	77	199	332	168	132	936
February	.....	26	52	111	205	102	56	552
March	2	26	93	132	235	116	24	628
April	1	27	64	34	9	3	22	160
May	5	57	80	30	3	9	11	195
June	32	133	65	16	8	9	7	270
Total	136	875	1048	837	1049	504	400	4849

*Toledo, Cleveland, Fostoria, and Bryan.

The grade for wheat is determined in the final analysis upon its milling qualities. Buying wheat on a grade higher than it would sell for in most cases was due to a lack of knowledge of the grade or to competitive conditions.

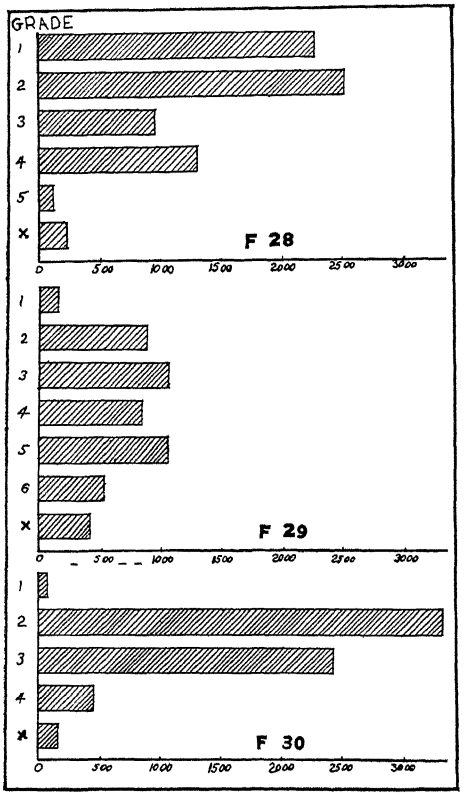
TABLE 33.—Receipts of Oats by Grades at Four Terminal Markets* by Months July, 1924 to June, 1925 (Carloads)

Month	1	2	3	4	Sample	Total
1924						
July	.....	49	232	18	1	300
August	1	722	333	71	25	1152
September	.....	643	516	28	74	1261
October	.....	307	272	30	6	615
November	.....	204	224	47	9	484
December	9	259	110	29	9	416
1925						
January	10	233	162	40	6	451
February	14	199	130	80	13	436
March	16	166	65	49	6	302
April	9	156	81	17	.....	263
May	13	159	159	22	1	354
June	6	213	122	15	5	361
Total	78	3310	2406	446	155	6395

*Toledo, Cleveland, Fostoria, and Bryan.

The proper grading of corn deserved more attention by managers than it received. This was especially true in the surplus sections, which must sell to terminal or other outside markets. The elevator that retailed practically all the corn purchased from local farmers was in a position to protect itself against loss due to improper grading. During the crop year from July 1, 1924 to June 30, 1925, a total of 4849 cars of corn were inspected at the four inspection points, Toledo, Cleveland, Fostoria, and Bryan. Of the total inspections made during the year, 2790 carloads, or 57.5 percent of the total, graded No. 4 or lower (Figure 29). During the months of December, 1924 and January, February, and March, 1925, there were inspected a total of 2822 cars of which 2267, or 80.3 percent, graded No. 4 or lower. The major movement of corn for the year was during these four months, and was almost entirely corn of the new crop. Losses due to over grading is a poor method of finding out what the new crop will grade. The grade at the beginning of the movement is not an accurate basis as to the grade three or four weeks later. Constant checking on the grade to prevent over and under grading can best be accomplished through the intelligent use of the moisture test daily during the heavy marketing in the winter months.

Grading oats is of minor importance in most sections of the State, due to the small amount sold to terminal markets or to other outside buyers. Many elevators handled from 5 to 15 cars during the year, which were sold locally for feed. For the amount resold locally the manager was able to prevent losses through misgrading. The quality of Ohio oats was such, if the inspections at the four terminals were correct, that the elevator manager should be able through ordinary care to prevent serious loss. During the crop year July, 1924 to May, 1925, 53 percent of the total inspections graded No. 2 or better, 37.6 percent graded No. 3, and the remainder graded No. 4 and sample grade (Fig. 30). In some elevators No. 2 was the basis of buying, and in others No. 3.



Figs. 28, 29, and 30.—Receipts of wheat (F. 28), corn (F. 29), and oats (F. 30) at four terminal markets July, 1924 to June, 1925, inclusive.

Since docking, though not as important as grading, may make the difference between a profit or loss on grain purchased, it deserves the attention of managers. There is less excuse for mistakes in determining the amount of dockage than there is for misgrading. The manager who utilized the equipment found in practically all elevators could determine accurately through the use of mechanical devices what grain should be eliminated, and a price could be paid for screenings according to their value as such, rather than pay the flat price for everything delivered as was done in some cases. Competition again was the principal cause for laxity in docking as well as grading. Here again, figures as to the amount of dockage were not available in sufficient number to be of value. In many elevators, that

recognize the necessity of close docking, the screenings were either returned to the farmer or purchased at a price whereby they might be resold as feed.

During the year 1924, 45 percent of all the elevators reporting had their scales tested once; 35 percent were tested twice; and 20 percent four times. It was impossible to secure the amount of loss due to improper weighing from enough companies to make an accurate determination of the amount of overage or shortage due to improper weighing. Data from 12 companies that did have accurate data showed the amount of gain or loss from improper weighing to be less than one cent per bushel on all wheat and oats handled. Due to the large amount of corn sold locally and the wide variations in the length of time it was stored by the local elevators, figures showing losses or gains from under- or over-weighing were not secured.

The managers of the majority of Ohio elevators need to give more attention to the methods employed in grading, weighing, and docking. The attempt to correct over-paying for grain by docking or weighing is not justifiable, even though competition be keen. Trying to break even or make a profit out of grain by correcting one inaccurate practice with another, should be condemned. The difficulties arising out of these practices in many cases, result in penalizing the growers of the highest quality grain. Just how long the growers who produce the better grades of grain will permit carelessness in the methods of handling is unknown, but that there can be no honest argument given by managers as to the reason why the efficient producer should be penalized for the benefit of the inefficient, is certain.

The availability and willingness of the Federal Grain Supervision offices to assist managers in understanding the various grades of grain, and the ease with which testing of the scales could be secured, leave little reason for the careless methods employed by many elevator companies.

LOCAL FACILITIES FOR HANDLING OHIO GRAIN

Adequate facilities were available for marketing all the grain produced in the State (Fig. 31). There were on January 1, 1925, 265 farmer-owned companies operating at 264 stations, and 420 flour mills, with at least one in each county.[3]

[3]Annual report of the Ohio Millers' State Association, 1925.

Three hundred and forty-eight line and independent elevator companies were operating at three hundred different shipping points.[4]

The distribution of these privately owned agencies gives the farmers' elevators keen competition, in the handling of grain and merchandise.

COMPETITION

Practically every farmer company had one or more local independent operator competitors for grain and merchandise at its local shipping point. Some stations, in addition to the competition furnished by the independent elevator, also had competition from flour and feed mills. The competition from the flour manufacturers was primarily for the purchase of wheat and the sale of feeds. In 1924 farmers' elevators were located in practically all of the surplus grain producing counties and were most common in the heavy grain producing sections in the western and northwestern part of the State. One county in the northwestern section had 20 separate farmer elevator units.

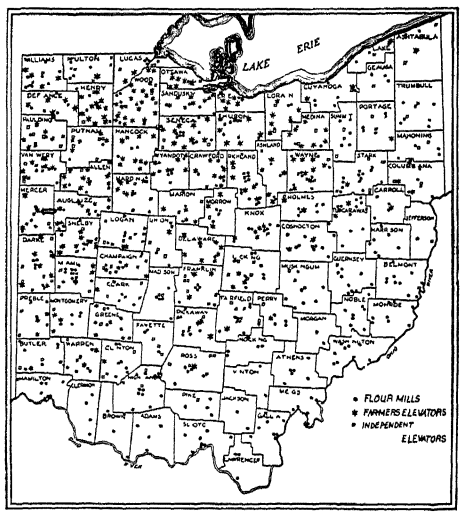


Fig. 31.—Competition for Ohio grain exists in all sections of the State

In a few sections in the northwestern part of the State, the independent operators were practically eliminated and the nature of the competition between farmers' elevators at different stations was no less keen than that between privately owned companies and the farmers' elevators. The difference in costs of operation among elevators with varying volumes of business was discussed on page 12. In the elevators with grain as the principal source of income, this difference was from 9 to 4.7 cents per $1.00 of sales, while in the merchandise elevators it ranged from 9.5 to 4.9 cents per $1.00 of sales. This variation in cost of doing business made it possible for the larger elevator, with low costs, to place a margin on doing

[4]Directory Ohio Grain and Feed Dealers, 1925.

business at a point that would force the nearby farmer company competitor eventually to become insolvent.

In some sections the large, efficient companies were more fully and better equipped for the handling of grain. Some companies had dryers which enabled them to condition the grain before shipping it to terminals or mills. During the recent few years when crops of soft corn were produced, these companies had a distinct advantage over other companies. Trucking of grain from territory beyond what may be considered the natural area developed to a considerable extent as a result of this situation. The tendency toward the development of a "line" of farmer-owned and -managed companies should result in the formulation of better working relationships between the separate elevator companies. Elimination of companies that are poorly managed and financed and that are located in territory that does not permit of an ample volume of business will probably continue; but it is desirable, from the standpoint of Ohio agriculture, to develop a better working relationship between the farmer-owned companies.

The line elevator companies, as conducted, were of little competitive significance in the marketing of Ohio grain. There were still in operation several of these line companies but the extent of their operation and competitive influence was of minor importance. Independent elevators, on the other hand, did furnish real competition, which made it impossible for a farmers' company to continue on an inefficient basis.

The largest number of farmers' elevators were located in the western half of the State. Many sections in eastern Ohio had no cooperative companies. The location and distribution of farmers' companies, however, were such that they gave all localities the benefit desired from the farmer elevator, by furnishing independent grain buying agencies with competition.

The nature of competition for a given farmers' elevator in the purchase of grain and the sale of merchandise varied greatly, depending on the kind and attitude of the local agency. The desire of flour millers for wheat often caused the elevator to pay more for wheat than could be secured for it on the market, when freight and handling charges were considered. The miller must either secure his wheat from the nearby producers or buy from other sources. Mills in certain sections during certain seasons of the year were paying as much and at times more, net, to the growers than could be secured by shipping to other markets. The sale of feed by-products of mills also gave keen competition to the local elevator.

Unlimited and "cut throat" competition between farmers' companies and line and independent companies in some communities had disastrous financial results for all companies. This competitive situation was settled satisfactorily in some cases, by mutual agreements and understanding, as to the margins to be taken on grain and merchandise. In some sections the different competitors contracted in advance, or before the date of delivery, in order to secure what they considered as their share of the grain moving out of the local market. One farmer elevator had contracts with all its stockholders for delivery of all grain not used on the farm. This served to stabilize the business of the company and permitted the manager to conduct the business on a sound basis. Contracts could be utilized to good advantage by more companies that have to meet periodic outbursts of unfair competitive practices.

MERCHANDISE

All elevators in Ohio handled one or more lines of merchandise. In more than 50 percent of the companies merchandise comprised more than half of the total sales during the year. In the elevators in which the grain business predominated, merchandise accounts formed 10 to 40 percent of the total sales. Merchandise could no longer be considered a side line. It was an integral part of the business and along with the service of grinding was increasing in practically all parts of the State.

The most common lines of merchandise, in the order of their importance, are feed, fertilizer, flour, salt, twine, coal, seed, fence, and many other articles needed by farmers. The number of lines handled varied greatly. It was necessary for two elevator companies to handle dry goods and groceries where there were no private agencies in the community furnishing this service.

Table 34 shows the percentage of elevators handling the various lines of merchandise. It is readily apparent that the demands on the part of farmers for more service from the elevator companies was constantly increasing the number of commodities handled. The company was not only required to handle more commodities, but where these were intelligently handled they became an important source of revenue to the company.

The difference in costs of operation in merchandise and grain elevators, as previously discussed, was caused mainly by the increased outlay for labor in the merchandise elevators. In these companies the average sales for each employee was $36,463; while in the grain predominating group, sales averaged $41,927 for each

employee. It is quite apparent that handling merchandise increased the cost for labor. The number of employees increased more rapidly in the merchandise elevators after a volume of business of $150,000 was reached. In many elevators there was not a proportional increase in the total volume of sales to offset the added number of employees. The merchandise elevators with sales varying from $75,000 to $149,999, and average sales of $118,667, had average sales for each employee of $33,905; those with sales of $150,000

TABLE 34.—Lines of Merchandise Handled by Ohio Farmers' Elevators, Percentage of All Elevators and of Grain Group and Merchandise Group Handling Each

Commodities handled	All elevators	Grain elevators	Merchandise elevators
	Percent	*Percent*	*Percent*
Feed	100.0	100.0	100.0
Fertilizer	99.4	98.8	100.0
Flour	96.1	96.3	95.1
Salt	96.1	97.6	95.1
Twine	95.0	96.3	95.1
Coal	92.7	93.9	95.1
Seed	92.7	89.0	96.3
Fence	80.4	75.6	84.0
Cement	52.0	46.3	58 0
Tile	49.7	39.0	64.2
Roofing	31.8	28.0	35.8
Hay	29.6	25.6	34.6
Livestock	25.0	24.4	30.1
Machinery	19.0	9.8	25.9
Gas and oil	15.6	22.0	8.6
Hardware	11.2	8.6	12.3
Tires and tubes	6.1	6.1	4.9
Posts	5.0	6.1	4.9
Lumber	3.4	2.4	4.9
Sand and gravel	3.4	1.2	6.2
Lime	2.8	0.0	6.2
Eggs	1.7	0.0	2.5
Wool	1.1	2.4	0.0
Spray material	1.1	0.0	2.5
Cement blocks	1.1	2.4	0.0
Paint	1.1	2.4	0.0
Cream	1.1	0.0	1.2
Potatoes	1.1	0.0	2.5
Plaster	0.6	0.0	1.2
Radio	0.6	0.0	1.2
Groceries	0.6	0.0	1.2
Sandstone	0 6	1.2	0.0
Stockfood	0.6	0.0	1.2
Dry goods	0.6	1.2	0.0

to $224,999, and average sales of $169,823, had an average sales of $35,380 for each employee. The problem of adjusting the labor to volume is one that needs to be watched by the management. The accounting practice of having the grain and merchandise accounts on the same basis, made it difficult for the manager to adjust his margins on the merchandise account. It cost more to handle merchandise than grain in the average elevator. The few elevators

that received a large part of their revenue from grain, to some extent ignored the merchandise costs as an important item of expense. In a very few instances it meant more steady employment for the labor necessary to handle the grain and an additional expense for buildings. The manager needs to direct more attention to the proper distribution of expense between the merchandise and grain accounts In elevators in which merchandise is the major part of the gross income and grain is a smaller part, the problem is just as important as it is in the elevators in which grain is the principal source of revenue. Where merchandise strongly predominates, the cost of maintaining elevating machinery for a small volume of grain may be excessive if the total cost is to be placed on the grain handled. The constant increase in merchandise as a source of income makes it necessary that better accounting practices be adopted and more attention paid to the proportion of expense charged to the grain and merchandise accounts.

TABLE 35.—Commodities on Which Principal Profits Were Made as Reported by 85 Grain and 80 Merchandise Elevators in Ohio

Type of elevator	Percent of elevators that made the greatest profit on								
	Grain	Miscellaneous merchandise	Feed	Coal	Grinding	Flour	Livestock	Seeds	Hay and straw
Merchandise 50 pct.	28	21	22	18	3.5	3.5	2	1	1
Grain 50 pct.	59	16	9	11	2	0	1	1	1

The significance of merchandise as a source of income is shown in Table 35. In the merchandise group 28 percent of the elevators derived a considerable portion of their revenue from grain, while the major portion was derived from various kinds of merchandise. In the grain group 59 percent of the elevators derived considerable profit from grain, while the remaining 41 percent listed merchandise as the more important source of income.

MARGINS

There was a wider variation in the margins received from merchandise than in those from grain Table 36 shows the range and average margin on the different commodities handled by Ohio elevators. It is apparent that the margin in some commodities would not pay the cost of handling. Feed, fertilizer, flour, and coal were the principal sources of gain to the elevator. Machinery and binder twine were the most common sources of loss. There was a growing tendency for elevators to branch out into many kinds of

merchandise. Some of the commodities are so specialized that the elevator was obliged to carry such large stock and furnish so much service to the customer that the expense more than offset any gain to be made. Radios, tires and tubes, and many other miscellaneous commodities are of this type.

TABLE 36.—Margins* Received by Ohio Farmers' Elevators on Various Lines of Merchandise

Commodity handled	Commonest		Average of margins quoted by			
	Margin	Range	Grain elevators		Merchandise elevators	
	Pct.	*Pct.*	*No.*	*Pct.*	*No.*	*Pct.*
Feed	10	2—20	86	12.3	87	10.5
Fertilizer	8	3—20	70	8.7	66	8.5
Flour	10	3—33⅓	74	12.8	73	13.0
Salt	20	5—50	67	18.3	64	14.6
Twine	5	0—15	65	6.7	62	5.9
Coal	15	5—40	76	16.6	69	17.0
Seed	10	2—50	70	12.3	76	12.7
Fence	10	3—20	49	10.4	56	12.2
Cement	15	0—28	32	10.8	41	12.6
Tile	15	0—50	25	10.6	38	13.4
Roofing	20	5—30	19	13 9	21	17.7
Hay	10	0—25	17	8.8	23	9.1
Livestock	10	3—10	2	6.5	1	10.0
Machinery	25	0—25	1	25.0	14	18.4
Gas and oil	15	10—30	9	18.0	4	18.2
Hardware	25	10—33⅓	4	21.2	7	27.6
Tires and tubes	20	10—25	3	21.7	4	16.2
Posts	20	10—30	4	17.5	3	21.7
Lumber	.....	30—33⅓	.....	.....	2	31.7
Sand and gravel	15	10—40	1	40.0	2	12.5
Lime	.....	10—15	.....	.....	2	12.5
Eggs	.....	2½—7	.....	.....	2	4.7
Wool	.....	2—10	.....	5.0	.....	.....
Spray material	.....	.....	3	.....	.....	.....
Cement blocks	15	10—15	3	13.3	.....	.....
Paint	.....	10—40	5	14.0	.....	.....
Cream	3	3—3	.....	.....	1	3.0
Potatoes	10	10—10	.....	.....	2	10.0
Plaster	15	15—15	.....	.....	1	15.0
Radio	35	35—35	.....	.....	1	35.0
Groceries	.....	.....	.....	.....	.....	.....
Sandstone	15	15—15	1	15.0	.....	.....
Stockfood	15	15—15	.....	.....	1	15.0
Dry goods	.....	15—20	2	17.5	.....	.....

*Margins as here used represents the percent added to cost of merchandise.

BRANDS

Another aspect of the merchandise problem that needed more careful consideration is the number of lines and brands that are to be handled by the elevator. Merchandise formed the bulk of inventories carried by most elevators. Flour and feed may serve to illustrate the difficulties often encountered where there was not a definite policy as to the lines and the amounts that were to be kept in stock. When the survey was made it was not uncommon to find

seven or eight brands of flour and as many as twelve brands of feed, all intended to meet supposed needs of the community. The elevator could have saved considerable space, interest, and labor by adopting a few well known and satisfactory brands to be carried. Although diversification in the lines carried increased costs of operation, yet many elevators attempted to add more lines of merchandise, even to the point where an added line might result in a lower rate of net profit than the elevator would have earned if the new line had not been added. A careful cost analysis of each line of merchandise to be handled would prevent the carrying of decidedly unprofitable lines for the sake of meeting an occasional order. Costs of carrying too many slow moving lines may reach the point where they absorb the profits of the better lines, and large diversified merchandise inventories in many companies had reached the point where profits of operation were endangered.

Whether or not the merchandise end of the elevator business had been profitable was due to several factors. The ability of the elevator to take an adequate margin to cover costs and allow for a profit was the most important factor in determining the profit. Competition in some lines was so keen that goods were often handled at a loss. The method now used in allocating the expense of operation, also determines whether or not a given line is profitable. Lack of individual commodity accounts and the lack of an accounting system that properly prorates the expense, made it difficult for managers to know what margin should be taken. The quantity of a given sideline and the methods used in handling it had an important bearing on the outcome. Pooling orders in advance for feed, fertilizer, coal, fence, and oil and having farmers pay cash and unload the commodities direct from the car were increasing in a few sections of Ohio. In some instances the pooling of orders was a direct result of competition from other agencies. In other places the desire of farmers who were willing to pay cash and order the needed amount of merchandise in advance, made it necessary for the elevator to furnish this service.

Pooling of orders creates several problems. The quantity of merchandise sold through advance orders will influence the quantity that may be carried in stock. Some managers who did not keep accurate records of the average amount of a given line of merchandise used during the year, often carried excessive inventories. This was especially true when pooling orders in advance was not taken into consideration.

MERCHANDISE BUYING METHODS

The deflation of 1920, which resulted in excessive losses in inventories, emphasized the importance of careful buying of supplies. In 1924, 42 companies were buying on the "hand to mouth" basis. They were merely making purchases for their current needs, or the average needs for the next thirty days. The managers of 55 companies were anticipating the probable needs of farmers for periods varying from 60 days to 6 months and were stocking various lines of merchandise for this period. Several factors were usually taken into consideration by managers who carried relatively heavy stock of merchandise. The price level is an important consideration, especially when the purchase of concentrated feed is contemplated. The amount of feed in the farmers' bins limits the prospective demand for high priced concentrates, regardless of the advantages that may accrue by using more concentrates. Many managers believed that there is a very definite limit in the price that farmers will pay for concentrated feeds when there is an abundance of feed on the farm. This price limit varies with communities and should be considered before ordering the supply for the feeding season. Shifts in the type of farm production made it important for managers to pay more attention to the change of farm needs in order that the elevator might be of greatest service to the community. The success of many of the merchandise elevators was due to the ability of the manager in accurately forecasting the future needs of farmers and making purchases of merchandise in sufficient quantity to meet this demand at advantageous prices.

MERCHANDISE DEMANDS ON WORKING CAPITAL

The merchandise side of the elevator business made a demand on the working capital of the company for carrying a supply of goods and for furnishing credit. The amount of notes and accounts receivable in the elevators in which grain predominated varied from $5,797 to $9,716, while the amount in the merchandise elevators varied from $5,262 to $13,840. These amounts represent credit due from farmers. Credit losses incurred during the deflation beginning in 1920 made necessary the development of more stringent credit policies. The extension of credit at the time of this survey was accompanied by an interest charge. Most companies charged 6 percent interest if the account was not paid within thirty days; a few allowed the account to run sixty days without interest; and some permitted it to run six months. Approximately one-half of

the companies in the State charged interest on overdue accounts. About 25 percent of the elevators were allowing a discount for cash, usually on quantity purchases, on one or more of the following commodities: fertilizer, coal, feed, and fence. Discounts given on coal varied from 20 to 75 cents per ton when cash was paid and the coal unloaded direct from the car; on feed, when cash was paid and the farmer assisted in unloading from the car, 50 cents to $2.00 per ton. A few companies made a practice of allowing a 2 percent discount for all commodities purchased for cash. The success of the cash discount policy in several of the more successful companies warrants its adoption by many other companies.

A few elevators attempted to solve the credit problem by going on cash basis for all merchandise. Two were still on this plan. Several factors, such as competition from other agencies that were giving credit, made it difficult to establish a cash basis of operation. The needs of farmers for credit were such that the company that refused to furnish credit reduced considerably the volume of its sales. The adoption of a better and more complete plan of allowing credit, supplemented with a definite plan of collection, seems to be the most practical way for elevators to meet this problem.

LIVESTOCK

The farmers' elevator is developing into a local unit that performs many of the functions necessary in marketing agricultural products. In 1924 livestock, wool, cream, poultry and poultry products were being assembled through the medium of the local grain elevator organization.

Of the miscellaneous commodities handled, livestock was by far the most important, being handled by 51 elevators as a regular part of the business. Livestock was purchased outright by 14 companies, which assumed the risks of marketing and took whatever profit they were able to secure. There were 37 companies that made a practice of consigning livestock for a fixed charged. The most common practice of consignment was for the elevator to make a charge for local handling and the farmer to assume the costs of freight, commission, feed, yardage, inspection, and other costs. The most common charge was 15 cents per hundred for this service. Another practice of handling on consignment was for the local elevator to charge a definite margin under the terminal market price and have the elevator assume all costs and risk in shipment. The charge made by the elevator for the service varied from 75 cents to $1.00 per hundredweight, the most common charge being

from 90 cents to $1.00. The elevators net return for handling livestock varied from a loss of $81 to a profit of $2954, the average being $958.

The main advantage, in addition to the income and full employment of labor, of handling livestock was the effect it had on accounts receivable. A majority of the elevators handling livestock were able to keep down accounts receivable by inducing farmers to leave a part of the money received for livestock to apply on charge accounts carried by the elevator.

ACCOUNTING PRACTICES

In 1924, 165 elevators used a suitable system in keeping their accounts. About 90 percent of this group had records that showed true condition of the elevator for the benefit of directors and members. With the decline of the grain business there was a tendency in some companies to throw the grain and merchandise business into common accounts. For this 100 elevators had various systems of accounts, some devised locally and others without a definite aim in methods employed. Many of these practiced a false economy. Adequate clerical help is important in larger companies. In the smaller elevators, directors should ascertain his accounting ability before hiring a manager. Sooner or later the affairs of the company must be known and strict attention to the accounting practices will save expensive audits later on.

The board of directors has the right to know the condition of the company. A trial balance was taken by 196 companies at least once a year, 149 monthly, 14 every six months, 11 every three months, 8 yearly, 4 daily, 1 weekly, and 9 had no trial balance during the year. More attention paid to the status of the company, at least monthly, needs to be given by the directors of most companies.

Realizing the importance of an audit, at least once a year, by disinterested auditors, in addition to the audit of a committee of directors, 107 companies had an audit annually and 29 semiannually by outsiders. A few companies had quarterly audits. The employment of competent disinterested auditors tended toward the adoption of sound business policies.

SUMMARY

1. There were 613 elevator companies in Ohio in 1924, 43 percent being farmers' companies, 58 percent of which were organized during the years 1918-1921.

2. The principal causes of failure of farmers elevators were incompetent management, lack of adequate capital, and the starting of companies where they served no economic purpose.

3. Few Ohio elevators met all the requirements for classification as "cooperative", but each company had one or more cooperative features.

4. Capacity of farmers' elevators varied from 5,800 to 92,500 bushels, the most common capacity being 10,000 to 20,000 bushels.

5. The amount of capital raised by farmers' elevators varied from $8,000 to $50,000, while the most common amount raised was $16,651, or about one-half the needs of the company.

6. Salaries of managers varied from $800 to $3600 per year, the most common being $1600 to $1800.

7. Costs of operation per dollar of sales in elevators varied inversely with the volume of business transacted. In grain elevators costs varied from 9.0 cents in those with total sales up to $74,999, to 4.7 cents in those having sales over $225,000. In the merchandise elevators costs of operation per dollar of sales varied from 9.5 cents in those with total sales up to $74,999 to 4.9 cents in those having sales over $225,000.

8. Seven elevators with average sales of $110,172 and having over 75 percent of their total sales from merchandise, had an average cost of operation per dollar of sales of 9.5 cents, while seven elevators with average sales of $97,867 and having over 75 percent of their total sales composed of grain, had an average cost of 6.2 cents per dollar of sales.

9. Changes in production by Ohio farmers made it necessary for managers to adjust the business of the elevator to the needs of the community.

10. A high turnover of fixed assets was an indication of the efficient use of labor and equipment which resulted in low cost of operation.

11. An ample volume of business seems necessary to the successful operation of Ohio farmers' elevators. The average of all companies, both grain and merchandise, for their entire existence,

with sales below $150,000 showed a deficit condition varying from $981 to $3284, and of those with sales above $150,000 showed surpluses varying from $2,029 to $9,078.

12. A "line" of farmers' elevators under one management had an advantage in labor cost, interest, and a saving in bad debts when compared to a single company with the approximate volume of sales.

13. Selling direct to mills and "feeders" in the East and South was practiced by the larger companies with satisfactory financial returns. Brokers and the track buyers got the bulk of the grain moved out of the State. Most sales were made "on track" or "to arrive".

14. Storing grain for farmers was practiced by 65 out of 198 elevators from which data were secured. The practice of selling farmer stored grain for cash and buying futures often led to losses for the elevator.

15. Little was known about the real function of hedging by the majority of elevator managers. Farmers' elevators that stored grain for their own account or sold grain for deferred shipment needed to understand more about the hedging operation.

16. The average operating capital requirement of 165 grain and merchandise elevators was $23,418, or about 50 percent of the total capital requirement. The most common amount subscribed by farmers at the beginning of operation was $16,000. The remainder of the capital was raised by loans from banks and individuals.

17. A majority of Ohio farmers' elevators were lax in their methods of grading and docking, which in many cases led to severe losses to their companies.

18. Competition for the surplus grains of Ohio farms was keen. The 265 farmers' elevators, 348 private elevators, and 420 flour mills furnished ample facilities for handling the surplus grains of Ohio farms.

19. Merchandise was becoming more important in all Ohio elevators and was complicating the problem of management. Greater demand was made on operating capital, inventories were larger, and the expense of operation was increased.